

CURRICULUM VITAE

GORDON L. AMIDON

PERSONAL:

Office Address:

4002A College of Pharmacy
The University of Michigan
Ann Arbor, Michigan 48109-1065

Birth Date: April 27, 1944

EDUCATION

1967 B.S. Pharmacy, State University of New York at Buffalo, Buffalo, NY.
1970 M.A. Mathematics, The University of Michigan, Ann Arbor, MI.
1971 Ph.D. Pharmaceutical Chemistry, The University of Michigan, Ann Arbor, MI.

PROFESSIONAL APPOINTMENTS

1997 – present Chairman, PORT Systems, LLC, Ann Arbor, MI

1996 (Apr-May) Visiting Professor, ETH Zurich, Department of Pharmacy,
Zurich, Switzerland

1994 - present Charles R. Walgreen, Jr., Professor of Pharmacy,
College of Pharmacy, The University of Michigan, Ann Arbor, MI.

1994 - present Chairman and Chief Scientific Officer, TSRL, Inc., Ann Arbor, MI

1990 - 1991 Sabbatical Leave from The University of Michigan. Food and
Drug Administration, Rockville, MD and University of
California San Francisco, San Francisco, CA.

1986 - 1994 President, TSRL, Inc., Ann Arbor, MI

1983 - present Professor of Pharmaceutics, The University of Michigan, College of Pharmacy
Ann Arbor, MI

1983 - 1986 Director of Research, SmithKline Consumer Products,
Philadelphia, PA

1981 - 1983 Director, Pharmaceutical Chemistry Research, INTERx
Research Corp., a subsidiary of Merck & Co., Inc.,
Lawrence, KS

1981 - 1983 Adjunct Professor of Pharmaceutics, University of
Kansas, Department of Pharmaceutical Sciences, Lawrence, KS

- 1976 - 1981 Assoc. Professor, University of Wisconsin, School of Pharmacy, Madison, WI
- 1976 - 1980 Asst. Dean for Educational Planning and Policy, University of Wisconsin, Madison, WI
- 1974 (Summer) Upjohn Summer Professor, The Upjohn Co., Kalamazoo, MI
- 1971 - 1976 Asst. Professor, University of Wisconsin, School of Pharmacy, Madison, WI
- 1967 (Summer) Upjohn Summer Scholar, The Upjohn Co., Kalamazoo, MI

HONORARY DEGREE

- 2001 Doctor of Pharmacy, Uppsala University, Uppsala, Sweden

AWARDS

- 1975- Ebert Prize, American Pharmaceutical Association, most outstanding paper representing original research to appear in the Journal of Pharmaceutical Sciences, 1974 (G.L. Amidon, S.H. Yalkowsky and S. Leung, Solubility of nonelectrolytes in polar solvents II: solubility of aliphatic alcohols in water, J. Pharm. Sci., 63, 3225 (1974).
- 1980- Parenteral Drug Association Research Award (as faculty advisor to student of award-winning research paper).
- 1981- Ebert Prize, American Pharmaceutical Association, Journal of Pharmaceutical Sciences, 1980 (G.L. Amidon, G.D. Leesman and R.L. Elliott, Improving intestinal absorption of water-insoluble compounds: a membrane metabolism strategy, J. Pharm. Sci., 69, 1363 (1980).
- 1984- Ebert Prize, American Pharmaceutical Association, Journal of Pharmaceutical Sciences, 1983 (L. Van Campen, G.L. Amidon and G. Zografi, Moisture sorption kinetics for water-soluble substances I: theoretical considerations of heat transport control, J. Pharm. Sci., 72, 1381 (1983).
- 1996- Scheele Award, Swedish Academy of Pharmaceutical Sciences, for outstanding contributions to the field of oral drug delivery and biopharmaceutics.
- 2003- Controlled Release Society Founders' Award, acknowledges pioneering and long-standing innovative science and technological developments in the area of controlled release.
- 2004- American Association of Colleges of Pharmacy Volwiler Research Achievement Award, in recognition of outstanding research achievement by an AACP pharmacy educator.

- 2004- American Association of Pharmaceutical Scientists Meritorious Manuscript Award, D.Sun, H.Lennernas, L.S. Welage, J.L. Barnett, C.P. Landowski, D. Foster, D.Fleisher, K-D Lee and G.L. Amidon, Comparison of human duodenum and Caco2 gene expression profiles for 12,000 gene sequences tags and correlation with permeability of 26 drugs, Pharm.Res. , 19, 1400 (2002).
- 2005- American Association of Pharmaceutical Scientists Distinguished Pharmaceutical Scientist Award, AAPS highest award, sponsored by AstraZeneca.
- 2006- Federation Internationale Pharmaceutique (FIP) Distinguished Science Award.
- 2006- Gerhard Levy Distinguished Lectureship.
- 2009- Alexander Von Humboldt Research Fellowship Award
- 2011- Humboldt Awards Ceremony – March, 2011, Bamberg, Germany
- 2011- Japan Society for the Promotion of Science (JSPS) Research Fellowship Award, March-May, 2012, October-November, 2012.
- 2012 –JSPS Takeru Higuchi Award for Pharmaceutical Research Contributions

PROFESSIONAL ORGANIZATIONS

American Association of Pharmaceutical Scientists (AAPS)
 American Pharmacists Association (APhA)
 American Association for the Advancement of Science (AAAS)
 American Association of Colleges of Pharmacy (AACCP)
 American Chemical Society (ACS)
 American Society for Biochemistry & Molecular Biology (ASBMB)
 The Controlled Release Society (CRS)
 American Peptide Society (APS)
 European Federation for Pharmaceutical Sciences (EUFEPS)
 International Pharmaceutical Federation (FIP)
 International Society for the Study of Xenobiotics (ISSX)
 International Society for Antiviral Research (ISAR)

LISTED IN

Who's Who in Science
 Who's Who in Frontiers of Science & Technology, 2nd Ed.
 International Who's Who in Medicine, 1st Ed.

PROFESSIONAL ACTIVITIES

President, American Association of Pharmaceutical Scientists (1998).
 Fellow, American Association of Pharmaceutical Scientists.
 Elected Fellow, APhA/Academy of Pharmaceutical Sciences (1981).
 Elected Fellow, American Association for the Advancement of Science (1985).
 Member, Pharmacy Internship Board Ad Hoc Committee: Internship Program Review
 Advisor to Pharmacy Examining Board on NABPLEX exam.
 Advisor for NIH on BSRG site visit (West Virginia University, 1979).

Member, Planning Committee, Land-O-Lakes Conference (1972, 1974, 1978-80).
 Chairman, Land-O-Lakes Conference (1982).
 Co-Chairman, Land-O-Lakes Conference (1984).
 Vice Chairman, Basic Pharmaceutics Section, Academy of Pharmaceutical Sciences (1981-82).
 Chairman-Elect, Basic Pharmaceutics Section, Academy of Pharmaceutical Sciences (1983).

Chairman, Basic Pharmaceutics Section, Academy of Pharmaceutical Sciences (1984).
 Chairman, Program Committee, Academy of Pharmaceutical Sciences (1982).
 Member, NIH NCI Site Visit (1982, 1984).
 Member, Ad Hoc Committee, NIH Pharmacology Study Section (1983, 1984).
 Member, NIH Pharmacology Study Section (1984-1988).
 Participant, Tulane University Site Visit (NIH Project, 1984).
 Elected member, Electorate Nominating Committee, Section S, American Association for the Advancement of Science.
 Member, AAPS Committee on Academic Excellence in Pharmaceutics
 Chairman, Awards Committee, The Controlled Release Society (1987-90).
 Elected member-at-large, Section S Committee, American Association for the Advancement of Science (1988).
 Editorial Board, *International Journal of Pharmaceutics*
 Editorial Board, *Journal of Pharmaceutical Sciences*
 Editorial Board, *Pharmaceutical Research*
 Editorial Board, *European Journal of Pharmaceutical Sciences*
 Associate Editor, *Pharmaceutical Research* (1988-1994)
 Publications Board, *PharmSci*
 Reviewer, Scientific Journals
 President, The Controlled Release Society (1993-94)
 Member, Peer Review 1995, Leiden/Amsterdam Center for Drug Research (Jan 1995)
 Elected Member, USP Committee of Revision (Standards) (1995-2000)
 Member, European Federation for Pharmaceutical Sciences (EUFEPS)
 Member, Drug Information Association
 Member/Expert Consultant, Generic Drugs Advisory Committee, FDA
 Member, Product Quality Research Initiative (PQRI) Steering Committee, FDA
 Member, American Society for Clinical Pharmacology & Therapeutics
 Member, American Society for Biochemistry & Molecular Biology (2003).
Editor, (ACS) Journal of Molecular Pharmaceutics (2003)
 Guest Editor, Editorial Board, Biological and Pharmaceutical Bulletin (Journal of the Pharm. Assoc. of Japan) (Jan 2004-Dec 2006).
 Member (invited), International Advisory Board of Indo-Japanese Conference on Advances in Pharmaceutical Research & Technology. (2005).

COMMITTEES:

The University of Michigan (past and present)

College of Pharmacy, Diversity, Member (2006-07)
 College of Pharmacy, Faculty Ombudsman (2003-07)
 Member, Diversity Committee, College of Pharmacy
 Member, Medicinal Chemistry Program Committee, Rackham Graduate School
 Member, OVPR Advisory Council (OAC)
 Past Member, Gene Therapy Group
 Past Member, Vector Core Advisory Committee

Past Member, Research Associate Deans Group (OVPR)
Past Member, Human Applications Laboratory Group (HAL)
Past Chairman, Computer Resources Committee, College of Pharmacy
Past Member, Graduate Affairs, College of Pharmacy
Past Member, Research Resources, College of Pharmacy
Past Member, Faculty & Teaching Assistant Awards Committee (Rackham)
Faculty Ombudsman, 2011-present

The University of Wisconsin

Member, Curriculum Committee, School of Pharmacy
Chairman, Curriculum Committee, School of Pharmacy
Member, Center for Health Sciences Liaison, School of Pharmacy
Member, Inpatient/Outpatient Clerkship, School of Pharmacy
Chairman, AACP Accreditation Self-Study Committee, School of Pharmacy
Member, Curriculum Study and Review, School of Pharmacy
Member, Clinical Search Committee, School of Pharmacy
Member, Engineering and Humanities symposium Faculty Advisory Committee, School of Pharmacy

CURRENT RESEARCH SUPPORT

NIH: Mucosal Cell Transporters and Enzymes for Enhancing Oral Drug Absorption, \$250,000 (DC Yr 1) 2009-2013, G.L. Amidon (PI)

PATENTS

US #6,669,954, Issued Dec 30, 2003. Controlled release of drugs, John R. Crison and Gordon L. Amidon.

US #6,541,454, Issued April 1, 2003. Phosphonates, biphosphonates and pharmaceutical compositions containing them, Eli Breuer, Gershon Golomb, Gordon L. Amidon, Ivan Alferiev, Naama Rozen and Aviva Friedman-Ezra.

US #6,207,191, Issued March 27, 2001. Multi-Stage Delivery System, John R. Crison and Gordon L. Amidon.

US #6,153,592, Issued Nov. 28, 2000, Enhancing the Bioavailability of Proteolytically Labile Therapeutic Agents, Gordon L. Amidon, Glen D. Leesman and Patrick J. Sinko.

US #6,048,551, Issued April 11, 2000, Microsphere Encapsulation of Gene Transfer Vectors, John M. Hilfinger, Beverly L. Davidson, Steven J. Beer, John Crison and Gordon L. Amidon.

US #5,993,858, Issued Nov. 30, 1999, Method and Formulation for Increasing the Bioavailability of Poorly Water-Soluble Drugs, John R. Crison and Gordon L. Amidon.

US #5,976,571, Issued Nov. 2, 1999, Method for Making a Multi-Stage Drug Delivery System, John R. Crison and Gordon L. Amidon.

US #5,851,275, Issued Dec. 22, 1998, Water Soluble Pharmaceutical Coating and Method for Producing Coated Pharmaceuticals, Gordon L. Amidon and John R. Crison.

US #5,834,022, Issued Nov. 10, 1998, Water Soluble Pharmaceutical Coating and Method for making, Gordon L. Amidon and John R. Crison.

US #5,686,133, Issued Nov. 11, 1997, Water Soluble Pharmaceutical Coating and Method for Producing Coated Pharmaceuticals, Gordon L. Amidon and John R. Crison.

US #5,674,530, Issued Oct. 7, 1997, Method for Making a Multi-Stage Drug Delivery System, Gordon L. Amidon and John R. Crison.

US #5,569,452, Issued Oct. 29, 1996, Pharmaceutical Formulation Having Enhanced Bile Acid Binding Affinity, Gordon L. Amidon, Lizbeth B. Sherman, John R. Crison.

U.S. Patent #5,455,286, Issued October 1995; Bioactive Composition; Gordon L. Amidon, Ramachandran Chandrasekharan and Aruther Goldberg.

US #5,387,421, Issued Feb. 7, 1995, Multi Stage Drug Delivery System, Gordon L. Amidon, ,Glen D. Leesman and Lizbeth Sherman.

US #5,229,131, Issued Jul. 20, 1993, Pulsatile Drug Delivery System, Gordon L. Amidon and Glen D. Leesman.

US #5,221,698, Issued June 22, 1993, Bioactive Composition, Gordon L. Amidon, Ramachandran Chandrasekharan and Arthur Goldberg.

US #4,976,949, Issued Dec 11, 1990, Controlled release Dosage Form, James Meyer, Gordon L. Amidon and Jennifer B. Dressman.

U.S. Patent #4,685,918, Issued August 11, 1987; Lipid Osmotic Pump; Gordon L. Amidon, Takeru Higuchi and Jennifer B. Dressman.

TEACHING

University of Wisconsin (1971-1981)

Professional Program Courses

Pharmaceutics I: Introduction to the Physical and Chemical Properties of Drug and Drug Product

Introduced biochemical energetics and environmental impact of chlorofluro hydrocarbons into the core thermodynamic and equilibrium curriculum.

Preservation and Stabilization of Pharmaceuticals: Chemical Stability

Introduced easy to calculate estimation procedures for shelf-life calculations as well as FDA regulatory standards for expiration dating of pharmaceuticals. This course lead to the

publication of the book “The Chemical Stability of Pharmaceuticals: A Handbook for Pharmacists”, now in its second edition and still widely used by industrial and regulatory scientists through out the world. (K.A. Connors, G.L. Amidon and V.J. Stella, Eds., The Chemical Stability of Pharmaceuticals, 2nd Ed., John Wiley & Sons, Inc., NY (1986).

Graduate Courses

Modeling and Data Treatment: Linear and Nonlinear Regression Analysis

Introduced linear and nonlinear regression methods and developed time sharing programs focused on chemical kinetic and pharmacokinetic applications.

Sustained and Controlled Release

Taught diffusion and transport processes in matrix and reservoir, diffusional and osmotic oral controlled release systems. Introduced gastrointestinal processes influencing and controlling oral controlled release systems.

The Physical Chemistry of Solutions and Solubility Estimation

Introduced physical chemical estimation methods into the curriculum. Particular focus was on partition coefficient and solubility in aqueous and aqueous mixed co-solvent systems.

Theoretical Methods in Drug Research

Introduced the modern theoretical methods, quantum mechanical and non-bonded computational methods for analysis of enzyme-substrate and drug-receptor modeling.

The University of Michigan (1983-present)

Professional Program Courses

Pharmaceutics 332 - Introduction to Physical Pharmacy

Introduced food and dietary examples of energetics as well as biochemical energetics and environmental impact of chlorofluro hydrocarbons, from aerosols into the core thermodynamic and equilibrium curriculum.

Pharmaceutics 333 - Physical Pharmacy of Solution Dosage Forms

Introduced solubility estimation and co-solvent selection in formulation of parenteral systems.

Pharmaceutics 434 - Physical Pharmacy and Biopharmaceutics II

Introduced principles of oral delivery including solubility-dissolution and permeability limited absorption, gastrointestinal physiology and nutrient processing and absorption mechanisms and carrier-mediated transport. Introduced FDA drug regulatory standards including the Biopharmaceutic Classification System (BCS) applicable to both NDA and ANDA (generic)

drugs. Developed a computer based training (CBT) program for teaching fundamental biopharmaceutics concepts and methods of analysis.

(“**Modern Biopharmaceutics**” Version 6: TSRL Inc., 2003, <http://www.tsrlinc.com>)

Pharmaceutics 435/560 – Pharmacokinetics and Biopharmaceutics

Taught the basic pharmacokinetics principles and ADME of drugs. Introduced mechanistic oral delivery system analysis into the course material in addition to the more common empirical system analysis.

Pharmaceutical Sciences 465 - Modern Biopharmaceutics & Pharmacogenomics

A course in modern biopharmaceutics and the recent advances in pharmacogenetics and genomics. The course will cover the oral absorption and metabolism of drugs from a classical and modern molecular perspective including discussion of current FDA bioequivalence (BE) regulatory standards. It will also cover the most recent advances in pharmacogenomic and genetic methods particularly as they relate to the selectivity and variability, in patients, of drug absorption, metabolism, and drug efficacy.

Pharmaceutical Sciences 563 – Modern Biopharmaceutics, Pharmacogenetics and Genomics

A course in Modern Biopharmaceutics and the recent advances in Pharmacogenetics and Genomics. The course will cover the oral absorption and metabolism of drugs from a classical and modern molecular perspective including discussion of current FDA Bioequivalence (BE) regulatory standards. It will also cover the most recent advances in pharmacogenomics and genetic methods, particularly as they relate to the selectivity and variability, in patients, of drug products including absorption, metabolism, and drug efficacy.

Graduate Courses

750 - Principles of Drug Delivery

Taught principles of oral delivery and delivery systems, solubility-dissolution, permeability and mechanisms and methods of absorption and *in vivo* absorption analysis.

752 - Chemical Kinetics and Mechanism

Taught basic kinetic methods and application to expiration dating and FDA regulatory requirements for drug product stability. The second edition of the book The Chemical Stability of Pharmaceuticals: A Handbook for Pharmacists, (John Wiley & Sons, Inc., NY (1986)) is based on this course.

755 - Special Topics (with Medicinal Chemistry 635)

Taught an advanced course in peptide and peptidomimetic absorption and metabolism and prodrugs approaches to enhance delivery. A monograph based on this course has been published,

Peptide-Based Drug Design: Controlling Transport and Metabolism, (M.D. Taylor and G.L. Amidon, Eds), American Chemical Society (1995).

757 - Transport Phenomena in Pharmaceutical Systems

Teaches transport processes fundamental to pharmaceutical systems including, dissolution, permeability and absorption prediction and transport processes on controlled release systems. Now includes biological transport pathways and membrane transporters.

Two advanced monograph are based on this graduate level course:

Transport Processes in Pharmaceutical Systems, (G.L. Amidon, P.I. Lee and E.M. Topp, Eds.) Marcel Dekker, New York, NY (1999) and

Membrane Transporters as Drug Targets, (G.L. Amidon and W. Sadee, Eds), Kluwer Academic/Plenum Publishers, New York (1999).

759 - Physicochemical Properties of Drugs

Taught methods of solubility and partition coefficient estimation and mixed solvent solubilities important in parenteral formulation.

Post-Graduate Teaching

Organized and teaches in the Strategies for Oral Drug Delivery Short Course. This course teaches the following concepts to industry and regulatory scientists.

- Understand the gastrointestinal, drug and dosage form processes controlling absorption.
- Understand the relevance and utility of *in vitro* tissue culture models to *in vivo* absorption.
- Understand and apply methods for estimating and evaluating oral drug absorption, including high throughput screening (HTS) methods and computer simulation and prediction methods.
- Evaluate and develop appropriate methods to optimize oral delivery.
- Be able to identify the potential rate limits to oral drug absorption.
- Understand intestinal and hepatic metabolic pathways and their impact on absorption and systemic availability.
- Identify appropriate types of controlled release dosage forms for specific drugs.
- Identify GI physiological variables influencing absorption rate and extent.
- List metabolism and transporter factors e.g., P-gp, influencing absorption and systemic availability.
- Have an understanding of molecular membrane transporters and their importance for drug absorption and excretion.
- Analyze and simulate pharmacokinetic absorption rate and plasma level.
- Understand the current FDA bioavailability (BA) and bioequivalence (BE) standards and how they may evolve in the future.

More than 1000 industrial and regulatory scientists have taken this yearly course over the past 15 years.

Short Courses

Strategies for Oral Drug Delivery, May 4-8, 1987, Ann Arbor, MI.

Strategies for Oral Drug Delivery, September 19-22, 1989, Ann Arbor, MI

Strategies for Oral Drug Delivery, August 24-August 29, 1992, Uppsala, Sweden
 Strategies for Oral Drug Delivery, October 5-8, 1993, Ann Arbor, MI
 Strategies for Oral Drug Delivery, August 28-September 2, 1994, Uppsala, Sweden
 Strategies for Oral Drug Delivery, October 9-13, 1995, Ann Arbor, MI
 Strategies for Oral Drug Delivery, May 6-10, 1996, Ascona, Switzerland
 Strategies for Oral Drug Delivery, September 29-October 3, 1997, Baltimore, MD
 Strategies for Oral Drug Delivery, August 23-28, 1998, Uppsala, Sweden
 Strategies for Oral Drug Delivery, March 6-10, 2000, Lake Tahoe, Nevada
 Strategies for Oral Drug Delivery, March 11-16, 2001, Garmisch-Partenkirchen, Germany
 Strategies for Oral Drug Delivery, March 10-16, 2002, Lake Tahoe, Nevada
 Strategies for Oral Drug Delivery, January 11-16, 2004, Vail, Colorado
 Strategies for Oral Drug Delivery, January 9-13, 2005, Garmisch-Partenkirchen, Germany
BioPharmacy-4, December 12-14, 2005, Santiago, Chile
 Strategies for Oral Drug Delivery, January 22-27, 2006, Lake Tahoe, Nevada
BioPharmacy Course, September 11-16, 2006, San Jose, Costa Rica
 Strategies for Oral Drug Delivery, January 18-27, 2007, Granada, Spain
Stability Course, August 5-8, 2007, Asuncion, Paraguay
International Course on Biopharmacy, December 3-6, 2007, Brasilia, Brazil
 Strategies for Oral Drug Delivery, March 2-8, 2008, Lake Tahoe, Nevada
Modern Biopharmaceutics, April 28-29, 2008, East Hanover, New Jersey
Modern Biopharmaceutics, Introduction to Absorption, Pharmacokinetics; GI Transit: Motility and Drug Absorption; Estimating Availability and Absorption; Estimating Absorption: BCS, June 2-6, 2008, Lima, Peru.
 Strategies for Oral Drug Delivery, March 8-13, 2009, Garmisch-Partenkirchen, Germany
 Strategies for Oral Drug Delivery, March 7-12, 2010, Lake Tahoe, Nevada
 Strategies for Oral Drug Delivery With BA/BE-FIP, Kobe, Japan, June 29-July 1, 2011 (Rescheduled from April, 2011)
 Strategies for Oral Drug Delivery, February 26-March 2, 2012, Lake Tahoe, Nevada

Teaching Summary:

Professor Amidon's early teaching is noteworthy for introducing modern computational methods into the graduate curriculum in the early 1970's. Computers and computational methods including nonlinear regression analysis, essential to pharmacokinetic analysis, linear regression and ANOVA for pharmaceutical stability, and quantum mechanical and molecular mechanics methods for estimating molecular properties such as surface areas and non-bonded interactions. While these tools are computer 'desktop' tools today, they were at the very earliest stage of development when Professor Amidon recognized the importance of these tools and introduced these methods and pharmaceutical applications into the graduate curriculum.

More recently, Professor Amidon's teaching has been noteworthy for introducing modern computational methods and computer based tools into both the professional and graduate program. He was one of the first pharmaceutical scientists to recognize the importance of computers in pharmaceutical research and training and introduced these tools into the graduate and professional courses he has taught. He has played a fundamental role in advancing FDA regulatory standards in the bioequivalence area and has introduced these fundamental new concepts into the curriculum. His professional program teaching blends the latest scientific knowledge with knowledge of FDA regulatory standards and application to both NDA and ANDA drug products. He has continued to bring the latest computer based advances in teaching to the classroom with his development of a computer based training program for teaching biopharmaceutics ("Modern Biopharmaceutics" Version 6: TSRL Inc., 2003, <http://www.tsrlinc.com>)

Professor Amidon's graduate teaching, over the course of his career, has focused on the fundamental physical chemical and transport processes in pharmaceutical systems. His teaching has consistently evolved to include the most fundamentally important concepts and advanced methods in transport processes in pharmaceutical systems with a particular focus on biopharmaceutics and oral delivery. This includes most recently biological transport and the rapidly advancing field of membrane transporters. The quality, significance and commitment to teaching at the professional and graduate levels has resulted in the publication of five books based on Professor Amidon's teaching.

Professor Amidon has also been active in postgraduate teaching through organizing and teaching a course on Oral Drug Delivery on a yearly basis in the US and Europe. This course is widely regarded as the best post-graduate course in oral delivery taught today. Over 1000 scientists have been trained in this week long intensive course covering modern strategies of oral delivery and modern methods in biopharmaceutics.

Finally, Professor Amidon's mentoring of graduate, postdoctoral and research fellows has been truly exceptional. He has trained 60 graduate students and 50 postdoctoral and research fellows. He has had 14 graduate students and 12 postdoctoral and research fellows choose academic careers in the US, Canada, Europe and Asia. Over 300 abstracts have been presented by his students at national meetings.

In summary, Professor Amidon's teaching and mentoring of pharmacists and pharmaceutical scientists has had an enormous impact on the pharmaceutical sciences world-wide.

Visiting Professor Lecture(s)/Training Courses

University of Iowa: Physiology of the GI tract and dosage form performance, December 1984 (undergraduate lecture), Iowa City, IA.

University of Iowa: Dissolution plus enzymatic reaction: theoretical analysis and prodrug Implications, December 1984 (graduate lecture), Iowa City, IA.

University of Toronto, MRC Visiting Professor: (1) Predicting drug absorption in man: a transport analysis based on a macroscopic mass balance approach; (2) Carrier-mediated drug absorption: transport analysis and bioavailability implications; (3) Innovation in drug product efficacy: pharmaceuticals in the next millennium, February 1990, Toronto, Canada.

FDA/Center for Drug Evaluation and Research, NONMEM: program structure and examples, March 1991, Rockville, MD.

FDA Short Course: Oral drug delivery and bioavailability. Gastrointestinal physiology and biochemistry; Gastrointestinal motility and transit; Biopharmaceutics and drug absorption (series of three lectures), April-May 1991, Rockville, MD.

Nagoya City University, Visiting Professor, October 23-November 3 1992, Nagoya, Japan.

Merck Sharp & Dohme Research Labs., Lecture Series: Theoretical considerations and *in vitro* and *in vivo* correlations for estimating human bioavailability; Transport mechanisms in the gastrointestinal tract and implications for oral drug absorption; Prodrug and analog approaches to improving oral drug absorption, January 18-19, 1993, Rahway, NJ and West Point, PA.

The University of Tennessee, College of Pharmacy, 1994 Kenneth E. Avis Distinguished Visiting Professor; International drug regulation and harmonization: biopharmaceutics moves to center stage (public seminar); Peptide transport and metabolism in the gastrointestinal tract (scientific seminar), January 17-19, 1994, Memphis, TN.

University of Houston, Visiting Professor in Pharmaceutics, Oral delivery of peptide type drugs; Oral absorption of insoluble drugs, May 1-3, 1994, Houston, TX.

State University of New York at Buffalo, graduate course lecture, Drug absorption models; seminar, A Biopharmaceutic Drug Classification scheme: implications for drug discovery and drug development, April 20-21, 1995, Buffalo, NY.

ETH Department of Pharmacy Lectures: Predicting oral drug absorption in humans: advances in drug discovery, development and regulation (Apr 23 1996); Mass transport and drug absorption (Apr 24 1996); GI physiology and transit (Apr 25 1996); Dissolution and absorption (Apr 30 1996); Oral peptide delivery (May 2 1996); GI physiology and drug absorption (May 21 1996); Drug regulation (May 23 1996), Zurich, Switzerland.

FDA Staff College Course on Biopharmaceutics, The rationale for a Biopharmaceutic Classification System, Sept 23-25, 1996, Rockville, MD.

INSERM Training Course "From Peptides to Peptidomimetics: Methods and Potential Applications in Therapy", Biodisposition and targeting of peptides, May 6-7, 1998, Le Vesinet, France.

Georgetown University CDDS Course, Predictive value of animal models for oral bioavailability in humans, May 12-15, 1998, McLean, VA.

CDDS/Lilly Drug Development Course, Predictive value of preclinical ADME, Aug 31-Sept 1, 1998, The Westin Indy Hotel, Indianapolis, IN.

Georgetown University Drug Delivery Course, Predictive value of pre-clinical ADME, June 6-8, 1999, Georgetown University, Washington, DC.

BCS Guidance Training/FDA, The BCS: examples and future developments, June 18-19, 2000, Washington, DC.

AAPS Dietary Supplements Forum Exploring the Science of Nutraceuticals, Oral delivery of dietary supplements: mechanistic and therapeutic considerations, June 28-30, 2000, Washington, DC.

Modern Biopharmaceutics Pharmacokinetics Course, GlaxoSmithKline Pharmaceutical Development, May 22-23, 2001, Upper Merion, PA.

Modern Biopharmaceutics Pharmacokinetics Course, GlaxoSmithKline Pharmaceutical Development, July 31-Aug 1, 2001, Harlow, Essex, United Kingdom.

Novapharm Ltd., Modern Biopharmaceutics Training Course, Oct 21-22, 2002, Toronto, Canada.

Federacion Farmaceutica Sudamericana (FEFAS), Stability Course--Chemical and Pharmaceutical Stability (Co-Chair/Lecturer) *Lecture titles*: Historical background, definitions of pharmaceutical stability, chemical stability vs kinetics; Solution Kinetics: Order of the reaction; zero-order reaction; first-order reaction; first-order reactions w/more than one end product; Parallel Reactions; consecutive reactions; second order reactions; pseudo first-order reactions; Temperature effects: transition state, collision theory; Arrhenius plot; activation energy calculations; using of activation energies; Q10 value calculations approximate method; Q10 value calculations exact method; Models for accelerated stability testing; Factorial and other experimental designs; Drug FDA guidelines for stability testing, April 1-4, 2003, Santiago, Chile.

Chilean Public Health Institute, Drug Delivery Foundation, Chilean Industrial Chemical-Pharmacists Society and Chilean Pharmaceutical Sciences Academy, International Biopharmacy Course 1 (Organizing Committee & Lecturer), *Lecture titles*: Wagner Nelson Method; Dissolution Processes; Gastrointestinal Transit; Dissolution Theory; *In vivo* Dissolution and Absorption; Predicting Absorption; BCS and *in vitro* BE; Predicting Absorption, August 11-14 2003, Santiago, Chile.

Molecular Biopharmaceutics Course, GlaxoSmithKline Pharmaceutical Development, Oct 21-22, 2005, Ware Facility, Hertfordshire, UK.

Molecular Biopharmaceutics Course, GlaxoSmithKline Pharmaceutical Development, Nov 2-4, 2005, Upper Marion Facility, Wayne, PA.

Workshops

Land-O-Lakes Workshop: Strategies for using drug metabolism: the oral route, June 1979, Lake Dalton, WI.

Land-O-Lakes Workshop: Formulation and process optimization: experimental design, June 1980, Lake Dalton, WI.

Pharmaceutical Manufacturers Assoc. Drug Metabolism Subsection Workshop: Influence of food and diet on food-drug interactions affecting drug absorption, March 1987, Bethesda, MD.

Food and Drug Administration, Predicting oral drug absorption in man, June 1988, Rockville, MD.

AAPS, FDA, USP Jointly Sponsored Workshop, Optimum information to characterize drug entity: biological considerations--animal models, December 1988, Washington, DC.

AAPS, FDA, USP Jointly Sponsored Workshop, Panel Chairman for Section on: Optimum information to characterize the dosage form, December 1988, Washington, DC.

Biomedical Simulations Resources Workshop; Predicting oral drug absorption in humans: a macroscopic mass balance approach for passive and carrier-mediated compounds, May 1990, Los Angeles, CA.

FDA Center for Drug Evaluation and Research Workshop; Predicting drug absorption in humans: bioavailability and statistical considerations, October 1990, Rockville, MD.

SmithKline Beecham Workshop on Peptide/Protein Drug Delivery, Transport and metabolism of peptides in the gastrointestinal tract, October 1991, Philadelphia, PA.

AAPS Workshop--Scale-up of Oral Solid Dosage Forms; Dissolution, December 1991, Arlington, VA.

University of Athens, New Developments in Biopharmaceutics-Pharmacokinetics Workshop; Oral delivery of peptides--review: possibilities, progress, May 1992, Athens, Greece.

FDA/AAPS Workshop on Scale-up of Oral Extended Release Dosage Forms (co-chair), September 1992, Arlington, VA.

Workshop on Transdermal Drug Delivery System, Skin permeation and metabolism of drugs with emphasis on peptides. Regulatory and safety aspects of TTS in the USA, May 6, 1993, Irbid, Jordan.

Biomedical Simulations Research Workshop, Simulation and analysis of the drug absorption processes: scientific and regulatory needs, May 21-22, 1993, Los Angeles, CA.

NIGMS Pharmacology and Biorelated Chemistry Program; Workshop on Oral Drug Delivery: Interface Between Discovery and Development; Drug transport and transit in the gastrointestinal tract: factors controlling oral bioavailability, December 5-7, 1993, Herndon, VA.

IBM and the University of Lund, Computational Chemistry and Molecular Modeling in Pharmaceutical Research Workshop; Structure transport analysis of the intestinal peptide transporter: data base and theoretical approaches. March 14-16, 1994, Lund, Sweden.

Food & Drug Administration, The biopharmaceutics drug classification scheme: extensions for controlled release products, June 13, 1995, Rockville, MD.

Sandoz Workshop--Penetration studies in support of drug discovery and early development. Modeling drug absorption from the gastrointestinal tract: influence of permeability, solubility and transit, Jun 2-4, 1996, Hagenthal, France.

CRS Baltimore Conference and Workshops, Co-chair, Technology, design and evaluation of oral controlled release dosage forms, August 21-22, 1996, Baltimore, MD.

AAPS/FDA/CRS Workshop on Scientific Foundation and Applications for the BCS and *In vitro In vivo* Correlations; Co-chair, speaker; Solubility, intrinsic dissolution and solubilization: influence on absorption, Apr 14-16, 1997, Alexandria, VA.

Regulatory Affairs Workshop (Ministry of Health and University of Buenos Aires); The rationale for a Biopharmaceutics Classification System for drug product regulation, May 15, 1997, Buenos Aires, Argentina.

Controlled Release Society Workshop, The Biopharmaceutics Classification System (BCS), June 15-17, 1997, Stockholm, Sweden.

Biopharmaceutics Classification System and *In Vitro In Vivo* Correlations Workshop, Solubility as a limiting factor to drug absorption, February 23-25, 1998, Sponsored by APV/AAPS/CRS/EUFEPS/FDA, Frankfurt, Germany.

AAPS Workshop on Permeability Definitions & Regulatory Standards for Bioequivalence (co-chair), Current views regarding permeability measurements for regulatory standards, August 17, 1998, Arlington, VA.

Indian Pharmaceutical Association/International Regulatory Affairs Workshop. Biopharmaceutics Classification System: scientific perspectives, December 9, 1998, Mumbai, India.

Modeling and Simulation Workshop, Biopharmaceutics simulation and prediction of bioavailability, February 4-5 1999, Washington, DC.

Novartis Pharmaceuticals Corp., Workshop on Pharmacokinetics and Drug Metabolism, Biopharmaceutics and pharmacokinetics: what's important for candidate selection and drug development (Lect 1), Biopharmaceutics and oral drug absorption: from prediction to regulation (Lect 2), Oct 17-18, 1999, Summit, NJ.

AAPS/PAHO Workshop, The Biopharmaceutics Classification System, November 5, 1999, Washington, DC.

AAPS/Federacion Farmaceutica Centroamericana y del Caribe (FFCC) Workshop, New bioequivalence regulations for drug products based on in vitro standards, November 28, 1999, Managua, Nicaragua.

Egyptian Pharmacists Day and Workshop, Biopharmaceutics Classification System—scientific perspectives, February 9-11, 2000, Cairo, Egypt.

ICRS/FIP-BPS/AAPS Workshop, Physiological considerations in the design of oral MR products, February 14-15, 2000, Judean Hills, Israel.

UFRGS College of Pharmacy Workshop, Oral drug absorption: from mechanism to regulatory standards, Aug 3, 2000, Porto Alegre, Brazil

AAPS Biopharmaceutics in the New Millennium Workshop, BCS-Scientific Principles, Sept 11, 2000; Why dissolution alone may not be completely predictive of BE, Sept 12, 2000, Washington, DC.

BCS: FDA Guidance and Implementation Workshop, Academic Perspective, September 25, 2000, Arlington, VA

FIP/Academy of Pharmaceutical Sciences Great Britain International Workshop on the Biopharmaceutic Classification System, Absorption of drugs from IR and MR dosage forms—a mechanistic approach for BCS, Oct 8, 2001, London, England.

Accelerating Drug Development: Biorelevant Dissolution and Impact of New BABE Guidances-Dissolution Workshop, BCS: A basis for extending BE dissolution standards: class II and class III drugs; BCS extensions report of discussion group, Jan 31-Feb 1, 2002, Princeton, NJ.

FIP/AAPS Bioavailability and Bioequivalence-Latin America Scientific and Regulatory Issues Workshop; Biopharmaceutics classification system: challenges and opportunities, Apr 25-May 1, 2002, Santiago, Chile.

AAPS/USP Workshop, Keynote Address, Bioequivalence Classification System: scientific basis and extension for immediate release products, May 7-8, 2001, Arlington, VA.

AAPS/FDA Workshop, BCS: A basis for extending BE dissolution standards, Sept 25-27, 2002, Arlington, VA.

Novartis Workshop, Genomics, proteomics and prodrugs, Sept 30-Oct 3, 2002, Bad Waltersdorf, Austria.

BA/BE Workshop, BCS—Concepts and application for biowaiver, Nov 20-21, 2002, Quito, Ecuador.

Federation Internationale Pharmaceutique (FIP)/ World Health Organization (WHO)/Pharmaceutical Association of Thailand/Mahidol University, Dissolution Technology and Bioequivalence Workshop: Biopharmaceutics Classification System: Concepts and Application for Biowaivers, Mar 10-11, 2003, Bangkok, Thailand.

Federation Internationale Pharmaceutique (FIP)/ World Health Organization (WHO), Hands-on-Dissolution and Bioequivalence Workshop; Biopharmaceutics Classification System: Concepts and Application for Biowaivers, Mar 12-18 2003, HoChiMinh City, Vietnam.

Symposia

University of Utah: Second International Symposium on Recent Advances in Drug Delivery Systems; Targeting of prodrugs for hydrolysis by GI tract enzymes, February 1985, Salt Lake City, UT.

Twelfth International Symposium of Controlled Release of Bioactive Materials: Swelling and drug release from p-HEMA-MAA hydrogel system, July 1985, Geneva, Switzerland.

APhA/APS Basic Pharmaceutics Section Symposium: Physiological flow modeling of the gastrointestinal tract and its use in oral dosage form design and evaluation, October 1985, Minneapolis, MN.

Third International Symposium on Recent Advances in Drug Delivery Systems: Carrier-mediated transport of small peptides and peptide analogs, February 1987, Salt Lake City, UT.

AB Hassle, Informal Symposium on Absorption: Physical modeling and predictability of drug absorption in the gastrointestinal tract: correlation between *in vitro* and *in vivo* results, September 1987, Molndal, Sweden.

Eastern Regional Group of AAPS, First Regional Symposium: Design of biopharmaceutical properties for drug absorption through prodrugs and analogs, September 1987, Atlantic City, NJ.

Drug Metabolism Discussion Group Symposium, Ortho Pharmaceutical Corp., Predicting oral drug absorption in man, June 1988, Ft. Washington, PA.

Second International Symposium on Disposition and Delivery of Peptide Drugs, FIP Satellite Symposium, Oral absorption of peptide type drugs: carrier-mediated transport of small peptides, September 1989, Leiden, The Netherlands.

First European Symposium on Controlled Drug Delivery, March 1990, Leidschendam, The Netherlands.

Johnson & Johnson Annual Symposium on Drug Delivery Technology; Intestinal mucosal cell transport of peptide and peptide-type drugs, October 1990, New Brunswick, NJ.

AAPS/FDA Symposium on Biopharmaceutics and Clinical Pharmacology of Nonsystemically Available Gastrointestinal Drugs; Biopharmaceutics, pharmacokinetics and pharmacodynamics of drugs that are active in the gastrointestinal tract, 4th Annual AAPS meeting, November 1990, Las Vegas, NV.

Capsugel Symposium, Oral Delivery of Peptides--from Theory to Practice; The role of formulation, chemical modification and drug metabolism in the oral absorption of peptides, Sept 1991, New Brunswick, NJ.

ACCP 20th Annual Meeting Symposium, Drug isomer plasma level from oral controlled release dosage forms: propranolol isomer ratio levels in dogs, October 1991, Atlanta, GA.

AAPS Sixth Annual Meeting, Symposium: Predicting oral drug absorption in humans; macroscopic and microscopic mass balance approaches, November 1991, Washington, DC.

Johnson & Johnson Focused Giving Scientific Symposium, Transport and metabolism of peptides in the gastrointestinal tract, December 1991 New Brunswick, NJ.

Kanazawa University Symposium, Intestinal absorption of peptide-type drugs, June 1992, Kanazawa, Japan.

ACS Symposium, Prodrug approaches for improving oral delivery: a novel use of the intestinal epithelial cell peptide transporter, August 1992.

Sixth International Symposium on Recent Advances in Drug Delivery Systems, Panel Moderator; February 21-25, 1993, Salt Lake City, UT.

Keystone Symposium, Intestinal epithelial cell peptide transport: structure transport and improving oral peptide delivery, March 8-12, 1993, Taos, New Mexico.

Zeneca Pharmaceuticals Group, Keynote Speech at Symposium on Technologies--Present & Emerging; Increasing the efficiency of developing effective drug products: discovery and development closing the loop, November 10, 1993, Wilmington, DE.

Bio-International '94 Symposium, *In vivo* validation of *in vitro* dissolution test and specification: application to immediate release to oral dosage forms, June 14, 1994, Munich, Germany.

Capsugel Board of Advisors, A theoretical basis for a drug biopharmaceutics drug classification and international drug regulation," December 6, 1994, Tokyo, Japan.

Seventh International Symposium on Recent Advances in Drug Delivery Systems; Transmembrane transport of peptide type compounds, February 27, 1995, Salt Lake City, Utah.

Capsugel Seminar and Open Forum on Biopharmaceutical Drug Classification and International Drug Regulation; The rationale for a biopharmaceutics drug classification, Proceedings Booklet, Capsugel Library, May 17, 1995, Princeton, NJ.

Fourteenth American Peptide Symposium, Oral delivery of peptide-type compounds, June 18-23, 1995, Columbus, OH.

Wyeth-Ayerst Research Symposium 1995, Drug design and screening from the viewpoint of optimizing oral drug bioavailability, August 17, 1995, Plattsburg, NY.

FIP Satellite Symposium on Optimizing Therapy Using Controlled Release Products, Swedish Academy of Pharmaceutical Sciences, Modeling drug absorption from the gastrointestinal tract as a tool for design of controlled release products; Biopharmaceutical aspects of gastrointestinal drugs, experience with resin therapy for cholesterol lowering, August 25-26, 1995, Stockholm, Sweden.

CRS Ireland Symposium, Current topics in peptide delivery; Overview, Peptide delivery in the year 2000, September 20-22, 1995, Dublin, Ireland.

German Chemical Society, Drug Targeting Symposium; Oral drug delivery of peptide-type drugs: present status and future prospects, February 9, 1996, Frankfurt, Germany.

AACP Academic Management Symposium, Experience with the NIH/SBIR program: how to be successful in the process and how to survive if you are funded, March 4, 1996, Costa Mesa, CA.

Capsugel Open Panel Discussion of the Biopharmaceutical Drug Classification Scheme, May 14, 1996, Geneva, Switzerland.

CRS Mini-Symposia, Hormonal and Autocoid Disorders, co-organizer, 23rd International Symposium on Controlled Release of Bioactive Materials, July 7-10, 1996, Kyoto, Japan.

24th Symposium of the European Peptide Society, Oral peptide and peptidomimetic delivery: present status and future prospects, Sept 8-13, 1996, Edinburgh, Scotland.

Pre-Symposium, Keynote Address, Drug absorption from the GI tract and design of oral controlled release products, B.V. Patel Pharmaceutical Education & Research Development (PERD) Centre, Feb 5, 1997, Ahmedabad, India.

3rd International Symposium on Innovations in Pharmaceutical Sciences and Technology; Plenary Lecture, Exploiting transport mechanisms in the GI tract for improved oral peptide and protein delivery, Feb 8, 1997, Ahmedabad, India.

Korean Society of Applied Pharmacology 1997 Symposium; Biopharmaceutic properties of drugs: new tools to facilitate drug discovery and development, Apr 18, 1997, Seoul, Korea.

Pharmacokinetic Symposium in Honor of Dr. Leslie Benet; Advances in drug development: concepts based on drug delivery, May 17, 1997, San Francisco, CA.

Gattefosse Symposium, Predicting absorption of water insoluble compounds and other "difficult" molecules: strategies for enhancement of absorption, including the use of lipidic systems, June 3-7, 1997, St. Remy, France.

Capsugel Symposium, The rationale for a Biopharmaceutics Drug Classification system, July 15, 1997, Tokyo, Japan.

Alfred Benzon Symposium, Oral administration of peptide and protein drugs, Aug 17-21, 1997, Copenhagen, Denmark.

Lilly Alternative Drug Delivery Symposium, Delivery of proteins via injectable depot and oral routes, April 23-24, 1998, Indianapolis, IN.

Gattefosse Symposium, Optimizing drug delivery: overview (also conference chairman), June 4-6, 1998, St. Remy, France.

Wyeth-Ayerst Scientific Symposium, Predicting human drug absorption: implications for drug discovery, drug development and drug regulation, November 17, 1998, Pearl River, NJ.

2nd AAPS Frontier Symposium, Session Co-chair; Designing drugs for hPEPT1 transport, April 8-10 1999, Bethesda, MD.

International Symposium: Strategies for Optimizing Oral Drug Delivery: Scientific to Regulatory Approaches; Introduction and Overview, Closing Remarks, Apr 19-21, 1999, Kobe, Japan.

Capsugel Symposium, Oral controlled release and pharmacodynamic optimization: future needs and prospects, April 23, 1999, Tokyo, Japan.

Powrex Pharmaceutical Symposium, Modern BA/BE and dissolution requirements: new scientific approaches to international regulatory standards, July 4-7, 1999, Osaka, Japan.

The New Pharmaceutical Engineering Program Symposium, Pharmaceutical science and regulatory policy, September 17-18, 1999, Ann Arbor, MI.

Annual Congress of the Asociacion Farmaceutica Mexicana (AFM) Symposium, The biopharmaceutics classification system, Oct 24-27, 1999, Puerto Vallarta, Mexico.

AAPS Symposium on Predicting Oral Absorption of Drugs (AAPS National Meeting), Predicting absorption: discovery to regulation, November 15-19, 1999, New Orleans, LA

AAPS Symposium on IVIVC Update and Its Role in Setting Dissolution (AAPS National Meeting), Predicting absorption along the GI tract: implication for design and regulation of MR dosage forms, November 15-19, 1999, New Orleans, LA.

International Symposium--Role of Transporters in Drug Disposition, Transporters and molecular mechanisms of small intestinal drug absorption, January 18-19, 1999, Tokyo, Japan.

University of Michigan, 10th International Cyclodextrin Symposium, May 21-24, 2000, Ann Arbor, MI

International Symposium on Scientific and Regulatory Issues for Pharmaceutical Markets, The Biopharmaceutics Classification System: scientific basis and extensions for immediate release products, Nov 28, 2000, Bangkok, Thailand.

International Symposium on Scientific and Regulatory Issues for Pharmaceutical Markets, The Biopharmaceutics Classification System and its application and extensions to immediate release products, Dec 2, 2000, Taipei, Taiwan.

International Symposium on Scientific and Regulatory Issues for the International Pharmaceutical Market, The Biopharmaceutics Classification System and its application and extensions to immediate release products; Extensions of BCS for immediate release and modified release products, Dec 5-6, 2000, Seoul, Korea.

60th Anniversary Symposium, Seoul Pharmaceutical Society, Modern molecular biopharmaceutics: from genes to absorption, Keynote Speaker, May 11, 2001, Seoul, Korea.

Capsugel PK/PD Symposium, Co-Chair; Oral candidate selection for optimized oral delivery, Dec 12, 2002, Basel, Switzerland.

Faculdade de Farmacia da Universidade de Lisboa, International Symposium--The New European Note for Guidance on Bioavailability and Bioequivalence (Co-Chair) – Lecturer, The role of the Biopharmaceutics Classification System in regulatory requirements of bioequivalence; Session Moderator, Challenges to Harmonization, Apr 12-13, 2003, Lisbon, Portugal.

2006 Annual Science Symposium, “Pharmaceutical Sciences: Bridging Research, Development and Regulation”, Organizer and Opening Remarks, University of Michigan, October 26-27, 2006.

Dissolution Testing of Oral Dosage Forms Symposium, The science of bioequivalence: BCS and insuring pharmaceutical product quality; Biopharmaceutics Classification System, September 5-6, 2007, Beijing, China.

BA/BE, BCS & IVIVC Johnson & Johnson Symposium; Overview of BA/BE, BCS and IVIVC, Future Directions of BCS, October 19, 2007, Raritan, NJ.

National Congress of Pharmaceutical Sciences, Mexican Pharmaceutical Association, Roundtable: International implementation of the BCS, November 6-8, 2007, Merida, Mexico.

Leslie Z. Benet's 70th Birthday Symposium, BCS & BCDDS: Pharmacokinetics and biopharmaceutics enters a new era, November 16-17, 2007, San Francisco, CA.

Symposium on Bioavailability/Bioequivalence and Regulatory Issues; Principles of BCS, WHO EML Comparison, March 15-22, 2008, Istanbul, Turkey.

11th CSPS Annual Meeting, Intestinal permeation: Prodrug transport and activation by intestinal mucosal cells; Molecular biopharmaceutics: A new era, May 24, 2008, Banff, Alberta, Canada

2010 Annual Science Symposium, "Physical Chemistry in the Age of Molecular and Cellular Biology", Organizer and Plenary Lecture, University of Michigan, October 14-16, 2010.

2011 Interdisciplinary REU Program, Leadership in Science Panel Discussion, University of Michigan College of Pharmacy, July 14, 2011

INVITED PRESENTATIONS

The Upjohn Company: Theoretical calculation of heats of complexation in solution, November 1971, Kalamazoo, MI.

University of Wisconsin (Milwaukee), Chemistry Department: Theoretical calculation of heats of complexation in solution, May 1972, Milwaukee, WI.

Pharmaceutics Seminar, University of Wisconsin: Onium ion interactions with hypothetical receptor features, Madison, WI.

University of Wisconsin, School of Pharmacy: Theoretical calculations on a model system for charge-relay effects in the serine hydrolase enzymes, March 1973, Madison, WI.

The Upjohn Company: The Means by which enzymes catalyze reactions, June 1974, Kalamazoo, MI.

The Upjohn Company: Aqueous solubilities of monofunctional aliphatic compounds, August 1974, Kalamazoo, MI.

University of Wisconsin, School of Pharmacy: Molecular surface area as a parameter in solubility prediction, Madison, WI.

The University of Michigan, College of Pharmacy: Molecular surface areas as a parameter in solubility prediction, October 1974, Ann Arbor, MI.

The Ohio State University, College of Pharmacy: Molecular surface area as a parameter in aqueous solubility estimation, November 1975, Columbus, OH.

The Upjohn Company: A free energy partitioning analysis of the hydrophobic effect, August 1976, Kalamazoo, MI.

The University of Iowa, College of Pharmacy: The binding of inhibitors to α -chymotrypsin, October 1976, Iowa City, IA.

The University of Iowa, College of Pharmacy: Expiration dating, October 1976, Iowa City, IA.

University of Wisconsin, Parkside, Biology Department: Substrate and inhibitor binding to enzymes: the role of the solvent, February 1978, Kenosha, WI.

Lawrence University, Biology Department: How enzymes catalyze reactions, February 1978, Appleton, WI.

University of Texas, College of Pharmacy and Drug Dynamics Institute: Drug receptor interactions; the solvent contribution, July 1978, Austin, TX.

University of Texas, College of Pharmacy and Drug Dynamics Institute: Drug design: a pharmaceutical perspective, July 1978, Austin, TX.

The University of Michigan, College of Pharmacy, Pharmaceutics Alumni Seminar: Drug absorption through membrane metabolism, September 1978, Ann Arbor, MI.

Ohio State University, College of Pharmacy and the Ohio Pharmaceutical Society: Information management and future issues: educational needs, April 1979, Columbus, OH.

Arner-Stone Pharmaceutical Company: A biochemical approach to drug absorption, April 1979, Chicago, IL.

University of Utah, College of Pharmacy: Drug absorption through membrane metabolism, May 1979, Salt Lake City, UT.

Northern California Pharmaceutical Association and Syntex, Inc.: New approaches to improving absorption of water insoluble compounds, May 1979, Palo Alto, CA.

ALZA, Corp.: A biochemical approach to drug absorption, May 1979, Palo Alto, CA.

Merck Sharp and Dohme, Research Labs: A biochemical approach to drug absorption, August 1979, West Point, PA.

The University of Wisconsin, School of Pharmacy: A biochemical approach to drug absorption, September 1979, Madison, WI.

Lawrence University, Biology Department: The biochemistry of absorption: pharmaceutical applications, November 1979, Appleton, WI.

Eli Lilly and Co., Research Labs: Strategies for solubilizing drug: A biochemical approach, January 1980, Indianapolis, IN.

W.H. Rorer and Company, Product development section: stable aspirin amino acid derivatives, January 1980, Fort Washington, PA.

W.H. Rorer and Company, Product Development Section: The physiochemical and biochemical basis for solubilization, January 1980, Fort Washington, PA.

Riker Division of 3M: Improving intestinal absorption of water insoluble drugs, April 1980, St. Paul, MN.

DuPont Research: A biochemical approach to drug absorption, August 1980, Wilmington, DE.

The University of Michigan, College of Pharmacy, Pharmaceutics Alumni Seminar: Intestinal absorption, October 1980, Ann Arbor, MI.

E.R. Squibb Pharmaceutical Co.: A biochemical approach to drug absorption, November 1980, New Brunswick, NJ.

University of Texas: Improving intestinal absorption of drugs, November 1980, Austin, TX.

University of Illinois: A biochemical approach to improving intestinal absorption, November 1980, Chicago, IL.

University of Buffalo: A membrane metabolism approach to drug absorption, June 1981, Buffalo, NY.

INTERx Research Corp.: A biochemical approach to drug absorption, July 1981, Lawrence, KS.

Eli Lilly Co. Research Labs.: Water uptake by soluble salts: a heat transport controlled process, September 1981, Indianapolis, IN.

The Univ. of Connecticut, Arthur E. Schwarting Pharmacy Practice Symposium: prodrugs; design and application, April 1983, Storrs, CT.

Philadelphia Discussion Group, Oral Absorption: Soluble prodrugs of hydrocortisone, February 1984, Philadelphia, PA.

T. Higuchi Research Seminar, Oral absorption of water soluble hydrocortisone prodrugs, March 1984, Lake Ozarks, MO.

University of California, San Francisco: Diffusion and enzymatic reaction: theoretical analysis and prodrug implications, April 1985, San Francisco, CA.

The Upjohn Co., Campaign for Michigan: Oral absorption and drug delivery systems, April 1985, Ann Arbor, MI.

Pfizer Research Seminar: Oral absorption of peptides, May 1986, Groton, CT.

The University of Michigan, College of Pharmacy Steering Committee Meeting: Oral absorption of peptides and related compounds, September 1985, Ann Arbor, MI.

University of Cincinnati: *In vivo* performance of enteric coated dosage forms, November 1986, Cincinnati, OH.

Procter & Gamble: Oral peptide delivery; small peptide absorption, November 1986, Cincinnati, OH.

University of Toronto: Oral absorption of peptides: passive vs carrier-mediated transport, December 1986, Toronto, Canada.

The University of Michigan, College of Pharmacy, Interdepartmental Program in Medicinal Chemistry: Oral delivery of peptides; prospects and limitations, January 1987, Ann Arbor, Michigan.

Syntex Research, Institute of Pharmaceutical Sciences: Oral absorption of passive and carrier-mediated compounds: application to peptide analog absorption, April 1987, Palo Alto, CA.

The University of Michigan, Chemical Engineering Department: Transport phenomena in pharmaceutical Systems, April 1987, Ann Arbor, MI.

The University of Michigan, Pediatric Cardiology Department: Dose and dose-rate effects on the oral delivery of first-pass metabolized drugs, April 1987, Ann Arbor, MI.

The Squibb Institute for Medical Research: Oral absorption of passive and carrier-mediated compounds: application to peptide analog absorption, April 1987, New Brunswick, NJ.

West Virginia University Graduate Research Association of Students in Pharmaceutics: Innovation in drug product efficacy: a new role for pharmaceutics, June 1987, Morgantown, W. VA.

Abbott Laboratories: Oral delivery of peptides and peptide analogs, July 1987, N. Chicago, IL.

CIBA-GEIGY Corporation: Design of biopharmaceutical properties for drug absorption through prodrugs and analogs, March 1988, Summit, NJ.

Hudson Valley Discussion Group: Predicting drug absorption in man, March 1988, New Brunswick, NJ.

IInd International ISSX Meeting: Design of prodrugs for oral drug delivery, May 1988, Kobe, Japan.

Sankyo Company, Oral absorption of captopril, May 1988, Tokyo, Japan.

Hoshi University, Oral delivery of peptide drugs, May 1988, Tokyo, Japan.

Kyoto University Hospital, Oral delivery of peptide drugs, May 1988, Kyoto, Japan.

Hokuriku Branch of the Pharmaceutical Society of Japan, Oral delivery of peptide drugs, May 1988, Kanazawa, Japan.

Nagoya City University, Oral delivery of peptide drugs, May 1988, Nagoya, Japan.

Kanebo Company, Oral delivery of peptidic drugs, May 1988, Osaka, Japan.

Kobe-Gakuin University, Oral delivery of peptidic drugs, May 1988, Kobe, Japan.

Takeda Company, Oral delivery of peptide drugs, May 1988, Osaka, Japan.

AAPS Joint Eastern Regional Meeting, Use of enzymes and carriers in the gastrointestinal tract for improving drug absorption, June 1988, Atlantic City, NJ.

Fourth Japanese-American Conference on Pharmacokinetics and Biopharmaceutics, Phase related variation and fasted state gastric emptying rates: implications for oral drug pharmacokinetics, July 1988, San Francisco, CA.

Sandoz Ltd., Oral delivery of peptide drugs, August 1988, Basle, Switzerland.

Controlled Release Society, Macroscopic mass balance approach for predicting fraction dose absorbed in humans, August 1988, Basel, Switzerland.

KRUG International, Technology Life Sciences Div., Johnston Space Center, Workshop on Pharmacokinetics-Pharmacodynamics, August 1988, Houston, TX.

Drug Absorption in microgravity. Pharmacokinetics and Pharmacodynamics in Space, Report of a Workshop, NASA Conference Publication 10048 (Aug 1988), Lunar and Planetary Institute, Houston, TX.

Pfizer Central Research, Carrier-mediated transport of small peptide type drugs, September 1988, Sandwich, Kent, England.

Third International Conference on Drug Absorption, Absorption of difficult drug molecules; carrier-mediated transport of peptides and peptide analogs, September 1988, Edinburgh, Scotland.

Royal College, University of Strathclyde, Oral absorption of peptide type drugs, October 1988, Glasgow, Scotland.

University of Geneva, Oral delivery of peptidic drugs, October 1988, Geneva, Switzerland.

Universite de Lausanne, Importance of solubility in drug absorption, October 1988, Lausanne, Switzerland.

Squibb Institute for Medical Research, Carrier-mediated absorption of ACE inhibitors, December 1988, New Brunswick, NJ.

Schering-Plough, Predicting drug absorption in man, January 1989, Miami, FL.

E.R. Squibb & Sons, Intestinal absorption mechanism of captopril, February 1989, Princeton, NJ.

University of Pittsburgh, The effect of gastric emptying and intestinal transit on oral drug absorption, Undergraduate Lecture, March 1989, Pittsburgh, PA.

University of Pittsburgh, Trischool Pharmaceutical Sciences Discussion Group, Predicting drug absorption in man, March 1989, Pittsburgh, PA.

NASA/Aerospace Medical Association Annual Convention, Panel Member, Oral absorption of drugs and the effectiveness of dosage form during space flight, May 1989, Washington, DC.

AAPS Midwest Regional Meeting, *In vitro* and *in vivo* methods for estimating drug absorption (Symposium), May 1989, Chicago, IL.

Benson Pharma/AS, The oral absorption of peptides, August 1989, Hvidovre, Denmark.

AB Hassle, Predicting oral drug absorption in man, August 1989, Molndal, Sweden.

Food & Drug Administration, Predicting oral absorption of water insoluble drugs, December 1989, Rockville, MD.

University of Iowa, Predicting oral absorption in man: a macroscopic mass balance approach, March 1990, Iowa City, IA.

Allergan Labs., The surfactant aided dissolution of water-insoluble drugs, March 1990, Irvine, CA.

Syntex Research, *In vitro* and *in vivo* methods for predicting drug absorption, March 1990, Palo Alto, CA.

ALZA Corp., Predicting drug absorption in man, March 1990, Palo Alto, CA.

ICI Pharmaceuticals, Predicting oral drug absorption in man, March 1990, Cheshire, England.

University of Manchester, Predicting oral drug absorption in man, March 1990, Manchester, England.

Shionogi & Co., LTD., Predicting oral absorption in man: application to passive and carrier-mediated drugs, April 1990, Osaka, JAPAN.

University of Tokyo, Predicting oral absorption in man: passive and carrier-mediated drugs, April 1990, Tokyo, JAPAN.

Taisho Pharmaceutical Co., Ltd., *In vitro* and *in vivo* methods for predicting bioavailability in man, April 1990, Tokyo, JAPAN.

American College of Clinical Pharmacology 10th Frontiers of Pharmacology--Clinical Pharmacology in Space; Effects of gravity on gastric emptying, intestinal transit, and drug absorption, May 1990, Houston, TX.

American Association of Colleges of Pharmacy, General Session; The dietary requirements of a changing faculty in the 90's, July 1990, Salt Lake City, UT.

American Association of Colleges of Pharmacy, Section of Teachers of Pharmaceutics, AAPS Task Force Report on Academic Excellence in Pharmaceutics, July 1990, Salt Lake City, UT.

Parke-Davis, General strategies for obtaining and optimizing bioavailability after oral administration; Round-Table Discussion, August 1990, Ann Arbor, MI.

ETH-Department of Pharmacy, Intestinal mucosal cell transport and metabolism of peptide-type drugs, September 1990, Zurich, Switzerland.

Glaxo Inc, Predicting drug absorption in man, October 1990, Raleigh, NC.

University of Southern California, School of Pharmacy; Predicting oral absorption in humans, February 1991, Los Angeles, CA.

30th Annual Intl. Industrial Pharmacy Conference--Current Issues in Drugs and Biologics Development; Bioequivalence of oral drugs which do not reach measurable systemic levels, February 1991, University of Texas, Austin, TX.

University of Texas, College of Pharmacy, Predicting drug absorption in man, February 1991, Austin, TX.

Syntex Research, Oral absorption of small peptides, March 1991, Palo Alto, CA.

AAPS Eastern Regional Meeting, Predicting extent of absorption of water-insoluble drugs in humans, June 1991, New Brunswick, NJ.

Controlled Release Society Meeting, Fasted-state variation of gastrointestinal variables: implications for oral drug bioavailability, July 1991, Amsterdam, The Netherlands.

Glaxo Inc. Research Institute, Drug development and regulation in the US or political science at the FDA, October 1991, Research Triangle Park, NC.

ACCP 20th Annual Meeting Symposium, Stereoselective disposition of ibuprofen in the dog after systemic exposure: enantiomeric interaction (D.E. Smith, H-Y Ahn and G.L. Amidon), October 1991, Atlanta, GA.

Extended Duration Orbiter Medical Project (EDOMP)/KRUG Life Sciences; Measuring gastric emptying in a microgravity environment, December 1991, Johnson Space Center, Houston, TX.

New Jersey Discussion Group, Gut approaches to peptide delivery, January 1992, Morris Plains, NJ.

University of Utrecht, Department of Pharmaceutics, Dissolution and absorption of water insoluble drugs, February 1992, Utrecht, The Netherlands.

Uppsala University, Dept of Biopharmaceutics & Pharmacokinetics, Dissolution of insoluble drugs, *in vitro* and *in vivo* considerations, March 1992, Uppsala, SWEDEN.

Swedish Academy of Pharmaceutical Sciences, Oral transport and absorption mechanisms from animals to humans: human bioavailability implications, March 1992, Stockholm, Sweden.

University of Kentucky, The Fourteenth Annual David E. Guttman Memorial Speaker, Oral absorption of peptides and peptidio mimetics, March 1992, Lexington, KY.

Eli Lilly & Company, Oral absorption of peptides and peptidomimetics, May 1992, Indianapolis, IN.

Second Jerusalem Conference on Pharmaceutical Sciences and Clinical Pharmacology; Transport and metabolism of peptides in the gastrointestinal tract, May 1992, Jerusalem, Israel.

Seoul National University; Mucosal cell peptide carrier-mediated transport, June 1992, Seoul, Korea.

Kyoto University, Recent advances in oral peptide delivery, June 1992, Kyoto, Japan.

Nagoya City University, Recent advances in oral peptide delivery, June 1992, Nagoya, Japan.

Taisho International Conference, Theoretical considerations in *in vitro* dissolution and drug product bioavailability, June 1992, Tokyo, Japan.

Sandoz Pharmaceuticals Corp., *In vitro in vivo* correlations: estimating human bioavailability, August 1992, East Hanover, NJ.

AAPS Annual Meeting, Roundtable; Bioequivalence issues of orally administered non-systemically available drugs, November 18, 1992, San Antonio, TX.

Wyeth-Ayerst Research, Predicting drug absorption in humans; selection of new drug candidates, December 1992, Princeton, NJ.

SmithKline Beecham, Oral peptide delivery, July 15-16, 1993, King of Prussia, PA.

Eli Lilly & Company, *In vitro in vivo* correlations in drug absorption: implications for a biopharmaceutics drug classification, July 21-22, 1993, Indianapolis, IN.

University of Florida, College of Pharmacy, Frank A. Duckworth Eminent Scholar Seminar Series, Oral peptide delivery, August 16, 1993, Gainesville, FL.

Boehringer Ingelheim, Oral absorption of water insoluble drugs, November 29, 1993, Ridgefield, CT.

The University of Michigan, College of Pharmacy Seminar; A biopharmaceutics classification for drug product regulation; January 10, 1994, Ann Arbor, MI.

Eli Lilly & Company, A biopharmaceutics drug classification and new drug development, January 25, 1994, Indianapolis, IN.

The University of Minnesota, College of Pharmacy; Oral delivery of peptide and peptidomimetic drugs, February 10, 1994, Minneapolis, MN.

3M Pharmaceuticals, Oral peptide and peptidomimetic delivery: prospects for the next 10 years, February 11, 1994, St. Paul, MN.

DuPont Merck, Biopharmaceutics, pharmacokinetics and pharmacodynamics of drugs that are active in the gastrointestinal tract, February 24, 1994, Wilmington, DE.

Hoffmann-LaRoche, Improving absorption of poorly soluble peptide like drugs, March 3, 1994, Nutley, NJ.

ALZA Corporation, Oral absorption of peptide drugs, March 21, 1994, Palo Alto, CA.

Taisho Pharmaceutical Co., Ltd., Biopharmaceutics classification of drugs, March 28, 1994, Tokyo, Japan.

Japanese Pharmaceutical Society Meeting, Plenary Lecture: Oral peptide and peptidomimetic delivery: prospects for the next ten years, March 30, 1994, Tokyo, Japan.

Kanazawa University, Mechanisms of absorption of peptide and peptidomimetic compounds: recent results and prospects for the future, April 1, 1994, Kanazawa, Japan.

Japanese Pharmaceutical Society, Hokuriku Branch, Mechanisms of absorption of peptide and peptidomimetic compounds: recent results and prospects for the future, April 2, 1994, Kanazawa, Japan.

University of Tokyo, Mechanisms of absorption of peptide and peptidomimetic compounds: recent results and prospects for the future, April 5, 1994, Tokyo, Japan.

Sankyo Pharmaceutical Co., Dissolution and absorption of water insoluble drugs: a theoretical basis for *in vitro/in vivo* correlation, April 6, 1994, Tokyo, Japan.

Daiichi Pharmaceutical Co., Dissolution and absorption of water insoluble drugs: a theoretical basis for *in vitro/in vivo* correlation, April 6, 1994, Tokyo, Japan.

Yamanouchi Pharmaceutical Co., Dissolution and absorption of water insoluble drugs: a theoretical basis for *in vitro/in vivo* correlation, and Mechanisms of absorption of peptide and peptidomimetic compounds: recent results and prospects for the future, April 7, 1994, Shizuoka-ken, Japan.

Shionogi Pharmaceutical Co., A theoretical basis for a biopharmaceutics drug classification for international drug regulation, April 11, 1994, Osaka, Japan.

Second Annual Midwest Users Forum for Population Approaches in Data Analysis; Absorption models, May 12-13, 1994, Parke-Davis, Ann Arbor, MI.

Joint Great Lakes/Central Region ACS Meeting, Using a patent to form a company; what really happens, June 1, 1994, Ann Arbor, MI.

IBC Conference, Improving the oral absorption of peptide and peptidomimetic compounds, Jul 28-29, 1994, Coronado, CA.

Gordon Research Conference (discussion leader-Drug Bioavailability); Drug transport in the GI tract: factors controlling oral absorption, August 8-12, 1994, New London, NH.

Arris Pharmaceuticals, Predicting drug absorption in humans, October 14, 1994, S. San Francisco, CA.

Chiron Corporation, Oral absorption of peptide and peptidomimetic drugs, October 31, 1994, Emeryville, CA.

University of California San Francisco, School of Pharmacy, Oral absorption of peptide and peptidomimetic drugs, October 31, 1994, San Francisco, CA.

Genentech, Inc., Peptide and peptidomimetic drugs: prospects for oral delivery, November 1, 1994, S. San Francisco, CA.

Syntex Research, Oral drug and prodrug absorption: evaluation and optimization strategies, November 2, 1994, Palo Alto, CA.

Gilead Sciences, Factors controlling and approaches to improving human oral drug absorption, November 3, 1994, Foster City, CA.

Agouron Pharmaceuticals, Inc., Factors controlling human drug absorption, November 4, 1994, San Diego, CA.

AAPS 1994 Annual Meeting, PDD Symposium; Recent results in oral absorption of large peptides, November 10, 1994, San Diego, CA.

Isis Pharmaceuticals, Inc., Drug transport in the gastrointestinal tract: factors controlling drug absorption, November 11, 1994, Carlsbad, CA.

Sandoz Research Institute., Predicting drug absorption in humans: approaches for discovery and development, November 28, 1994, East Hanover, NJ.

Teijin Company, Estimating and optimizing oral drug absorption: from discovery to development of optimized delivery systems, December 7, 1994, Tokyo, Japan.

Taisho Pharmaceutical Co., Oral absorption of peptide and peptidomimetic drugs, December 7, 1994, Tokyo, Japan.

Fujisawa Pharmaceutical Co., Oral absorption of peptide and peptidomimetic drugs, December 8, 1994, Osaka, Japan.

Sumitomo Pharmaceutical Co., Intestinal transport and metabolism of peptide and peptidomimetic drugs, January 30, 1995, Osaka, Japan.

Tanabe Seiyaku Co., Osaka, Intestinal transport and metabolism of peptide and peptidomimetic drugs; A biopharmaceutic drug classification scheme: a rational basis for establishing *in vitro-in vivo* correlations; Human permeability results and oral drug absorption: correlation and predictions, January 31, 1995, Osaka, Japan.

Fujisawa Pharmaceutical Co., Intestinal transport and metabolism of peptide and peptidomimetic drugs, February 1, 1995, Osaka, Japan.

Ono Pharmaceutical Co., Human permeability results and oral drug absorption: correlation and predictions, February 2, 1995, Kyoto, Japan.

Kyoto Pharmaceutical University, Intestinal transport and metabolism of peptide and peptidomimetic drugs, February 3, 1995, Kyoto, Japan.

Nihon Shinyaku, Intestinal transport and metabolism of peptide and peptidomimetic drugs; Human permeability results and oral drug absorption: correlation and predictions, February 3, 1995, Kyoto, Japan.

Kowa Research Institute, A biopharmaceutic drug classification scheme: a rational basis for establishing *in vitro-in vivo* correlations, February 6, 1995, Shizuoka, Japan.

Taisho Pharmaceutical Co., Oral drug delivery considerations in OTC product development, February 7, 1995, Tokyo, Japan.

Kissei Pharmaceutical Co., Ltd., Human permeability results and oral drug absorption: correlation and predictions, February 10, 1995, Tokyo, Japan.

R.W. Johnson Pharmaceutical Research Institute, Oral delivery of peptides and peptidomimetic drugs, February 17, 1995, Raritan, NJ.

SmithKline Beecham, A biopharmaceutics drug classification scheme: implications for drug design and development, March 10, 1995, Philadelphia, PA.

Parke-Davis, Improving the oral absorption of peptide type drugs: application to endothelin antagonists, March 21, 1995, Ann Arbor, MI.

The University of Michigan Medical Center, Basic Science Conference, Peptide transport in the GI tract, March 27, 1995, Ann Arbor, MI.

IBC Conference on Peptidomimetic & Small Molecule Design, The effect of small and large intestinal transit time variability on drug absorption and *in vitro in vivo* correlations, March 29-31, 1995, Philadelphia, PA.

Schering-Plough, Oral absorption of water insoluble drugs, April 5, 1995, Kenilworth, NJ.

Ohio State University, College of Pharmacy, Progress and prospects in oral peptidomimetic delivery, June 19, 1995, Columbus, OH.

Abbott Laboratories, A biopharmaceutics drug classification scheme: implications for *in vitro in vivo* correlation, July 18, 1995, N. Chicago, IL.

Chicago IAM Meeting, An *in vivo* perspective on *in vitro* methods for predicting membrane permeability, August 18, 1995, Chicago, IL.

The Royal Danish School of Pharmacy, Biopharmaceutic drug classification scheme; implications for drug regulation, August 28, 1995, Copenhagen, Denmark.

University of Pittsburgh, School of Pharmacy, Factors controlling human drug absorption, September 28, 1995, Pittsburgh, PA.

The University of Michigan, Gene Therapy Seminar Series, Development of adenovirus vectors for gastrointestinal gene therapy, October 19, 1995, Ann Arbor, MI.

AAPS RA Open Session; Biopharmaceutics Classification System, November 8, 1995, Miami FL.

Agouron, Oral delivery of water insoluble drugs, December 7, 1995, San Diego, CA.

PathoGenesis, Colon targeting for local GI delivery, December 8, 1995, Seattle, WA.

Chiron, Estimating absorption from combinatorial libraries, December 11, 1995, San Francisco, CA.

Bristol-Myers Squibb, Predicting oral drug absorption, December 18, 1995, Newark, NJ.

University of Michigan, School of Dentistry, Bioerodible polymers for drug delivery, January 25, 1996, Ann Arbor, MI.

Cephalon, Inc., Predicting oral absorption in humans: from discovery to clinic, February 28, 1996, West Chester, PA.

New Jersey Discussion Group, A biopharmaceutic drug classification scheme: application to immediate and controlled release drug products, April 18, 1996, Brunswick Hilton & Towers, E. Brunswick, NJ.

F. Hoffmann-La Roche Ltd., Predicting drug absorption in humans: discovery to development, May 22, 1996, Basel, Switzerland.

Groupe Lipha, Predicting oral drug absorption in humans: advances in drug discovery, development and regulation, May 27, 1996, Lyon, France.

Groupe de Metabolisme et de Pharmacocinetique (GMP), Prediction of *in vivo* absorption in man using experimental and theoretical approaches, June 5, 1996, Paris, France.

Sanofi Research, Oral drug absorption, advances in discovery, development and regulation, June 6, 1996, France

AAPS Eastern Regional Meeting, Optimizing oral delivery of water soluble drugs, June 13, 1996, New Brunswick, NJ.

NIH & National Toxicology Center, KFDA, A biopharmaceutic drug classification system for international drug regulation, July 13, 1996, Seoul, Korea.

Sam Yang Group R & D Center, A biopharmaceutic drug classification system for international drug regulation, July 15, 1996, Taejon, Korea.

Seoul National University, A biopharmaceutic drug classification system for international drug regulation, July 16, 1996, Seoul, Korea.

Dong-A Pharmaceutical Co., A biopharmaceutic drug classification system for international drug regulation, July 16, 1996, Seoul, Korea.

Eighth Japanese-American Conference on Pharmacokinetics and Biopharmaceutics, Chair—Delivery of Proteins, July 29-30, 1996, Seattle, WA.

3rd Jerusalem Conference on Pharmaceutical Sciences and Clinical Pharmacology; Co-chair, Peptide and Protein Delivery and Absorption; Exploiting transport mechanisms in the gastrointestinal tract for improved oral peptide and protein delivery, Sept 1-6, 1996, Jerusalem, Israel.

Institut de Recherche Jouveinal; Predicting drug absorption in humans: discovery, development and regulatory advances, Oct 15, 1996, Cedex, France.

BioChem Therapeutic, Inc.; Predicting oral drug absorption: discovery, development and regulatory implications; Oct 25, 1996, Montreal, Canada

AAPS Annual Meeting; AAPS/AACP—Grantsmanship Seminar; View from a study section member perspective, Oct 30, 1996, Seattle, WA

Swedish Academy of Pharmaceutical Sciences, Swedish Pharmaceutical Congress; Scheele Lecture—Evolution and Revolution in Biopharmaceutics, Nov 12, 1996, Stockholm, Sweden; Dr. Amidon received the 1996 Scheele Award from the Swedish Academy of Pharmaceutical Scientists for his contributions to the field of oral drug delivery and biopharmaceutics.

Scheele Symposium 1996 on Oral Drug Delivery; Historical perspectives and the future of oral drug delivery, Nov 14, Uppsala, Sweden.

Astra Hassle AB, Predicting oral drug absorption in humans: advances in drug discovery, development and regulation, Nov 15, 1996, Molndal, Sweden

UPSA Labs; Rationale for a biopharmaceutic classification system: current status and future FDA developments, December 9, 1996, Rueil Malmaison, France.

Tables Rondes Roussel UCLAF; Cellular models for epithelial drug transport and strategies for improving oral drug absorption; Dec 10-11, 1996, Paris, France

Institut de Recherches Internationales Servier; Predicting oral drug absorption in humans: implications for drug discovery, drug development and drug regulation, Dec 12, 1996, Cedex, France.

Institut de Recherche Jouveinal; Prodrug strategies for improving oral drug delivery of water soluble and water insoluble drugs, Dec 13, 1996, Cedex, France.

Sookmyung Women's University; The rationale for a biopharmaceutics classification system for drug product regulation, Apr 21, 1997, Seoul, Korea

Pacific Corp. R & D Center; Biopharmaceutic properties of drugs: new tools to facilitate drug discovery and development, Apr 22, 1997, Seoul, Korea

1st Drug Optimization via Retrometabolism Conference; Peptide transporter based prodrug design: opportunities for improving the permeability of a polar drug, May 7, 1997, Amelia Island, FL.

Technological Advances in Drug Delivery Systems (Argentine CRS Chapter); Dissolution and absorption of water insoluble drugs; Oral delivery of gene therapeutics, May 12-14, 1997, Buenos Aires, Argentina.

University of Manchester, Predicting oral absorption in humans, June 10, 1997, Manchester, UK.

Bayer AG, Gastric emptying, intestinal transit, and food effects on oral controlled release dosage form performance, June 12, 1997 Cologne, Germany.

EUFEPS 4th International Conference on Drug Absorption, Drug dissolution and absorption: application to prediction and regulation, June 13-15, 1997, Edinburgh, Scotland.

Japan Society of Drug Delivery System Conference, Predicting oral drug absorption: implications for drug discovery, drug development and drug regulation, July 10-11, 1997, Sapporo, Japan.

Tokyo University, Intestinal peptide transport pathways: new approaches to drug delivery, July 14, 1997, Tokyo, Japan.

Daiichi Pharmaceutical Co., Intestinal peptide transport pathways: new approaches to drug delivery, July 16, 1997, Tokyo, Japan.

Sankyo Pharmaceutical Co., Intestinal peptide transport pathways: new approaches to drug delivery, July 16, 1997, Tokyo, Japan.

Otsuka Pharmaceutical Co., Rationale and implementation of a biopharmaceutics classification system for new drug regulation, July 17, 1997, Tokushima, Japan.

Fujisawa Pharmaceutical Co., Dissolution and absorption of water insoluble drugs: influence of micelles and emulsion particles, July 18, 1997, Osaka, Japan.

Kanazawa University, Intestinal peptide transport pathways: new approaches to drug delivery, July 19, 1997, Kanazawa, Japan.

FASEB Conference, Improving oral absorption: strategies based on peptide transport, July 27-Aug 1, 1997, Copper Mt., Colorado.

Astra Hassle, Predicting drug absorption: implications for drug discovery, drug development and drug regulation, August 25, 1997, Goteborg, Sweden.

5th International Congress of FIP, Unravelling the complexities of the oral absorption process: predicting human drug absorption, August 25-September 5, 1997, Vancouver, BC, Canada.

Schering-Plough Research Institute, Predicting human drug absorption: implications for drug discovery, development and regulation, September 24, 1997, Kenilworth, NJ.

Glaxo Wellcome, Predicting drug absorption: implications for drug discovery, development and regulation, October 20, 1997, Durham, NC.

Canadian Society for Pharmaceutical Sciences, New standards for bioequivalence: an absorption view, February 13-14, 1998, Ottawa, Canada.

Elan Research Institute, Trinity College, Delivery of peptides and proteins by oral and depot routes, March 30, 1998, Dublin, Ireland.

Bioavailability of Environmental Chemicals Conference, Predicting oral absorption and bioavailability, April 1, 1998, University of Florida, Sarasota, FL.

FIP Bio-International 98 Conference, An alternative approach to bio-study and its limitations (also co-chair of session), May 18-21, 1998, Bethesda, MD.

AAPS Eastern Regional Meeting, President's Address, June 1, 1998, Parsippany, NJ.

Challenges for Drug Delivery and Pharmaceutical Technology Conference, Setting bioequivalence requirements for drug development based on preclinical data: optimizing oral drug delivery systems, June 9-11, 1998, Tokyo, Japan.

Sankyo Pharmaceutical Co., Predicting oral drug absorption: implications for drug discovery, drug development and drug regulation, June 12, 1998, Tokyo, Japan.

American Association of Veterinary Pharmacology & Therapeutics, Predicting oral absorption: animal to human, June 14-18, 1998, Asilomar, CA.

Mylan Pharmaceuticals, Inc., The biopharmaceutics classification system; Drug absorption and the gastrointestinal tract, June 26, 1998, Morgantown, W.VA.

Yamanouchi Pharmaceutical Co., Predicting oral drug absorption: implications for discovery, development and regulation, July 27, 1998, Shizuoka, Japan

Mochida Pharmaceutical Co., Fuji Central res. Lab., Predicting oral drug absorption: implications for discovery, development and regulation, July 28, 1998, Shizuoka, Japan.

Fujisawa Pharmaceutical Co., Predicting oral drug absorption: implications for discovery, development and regulation, July 29, 1998, Osaka, Japan.

Japanese American Conference, Closing Remarks, July 31, 1998, Nagoya, Japan.

Taiwan Local Chapter of Controlled Release Society Conference, Predicting oral drug absorption: opportunity for oral controlled release and drug delivery, August 5, 1998, Taipei, Taiwan.

National Cheng Kung University, Predicting oral drug absorption: opportunity for oral controlled release and drug delivery, August 6, 1998, Taipei, Taiwan.

Ares Advanced Technology, Inc., Optimizing Oral Delivery, September 23, 1998, Boston, MA.

6th Japanese PDA Annual Meeting, Special Lecture—Significance of dissolution test in the quality assurance of tablets, Nov 30-Dec 1, 1998, Tokyo, Japan.

Kyoritsu College, Prodrug and gene delivery approach to enhancing antiviral membrane transport, December 2, 1998, Tokyo, Japan.

Tohoku University, Prodrug and gene delivery approach to enhancing membrane transport, December 4, 1998, Sendai, Japan.

5th EUFEPS Conference: Optimizing Drug Development: Fast Tracking into Human. How useful are *in vitro* cell line systems (Academic viewpoint), December 7, 1998, Wiesbaden, Germany.

50th Indian Pharmaceutical Congress/FAPA, Dissolution and absorption of water insoluble drug products, Dec 10-12 1998, Mumbai, India.

AFPE Board of Directors, Do graduate programs in universities provide the appropriate skills, for PhDs to survive in pharmaceutical industries, February 12, 1999, New York, NY

Society of Biopharmaceutics and Pharmaceutical Teachers, Biopharmaceutical classification of drugs and *in vivo in vitro* correlations, Feb 21-23, 1999, Santiago de Compostela, Spain.

Hoffmann-LaRoche, Predicting drug absorption: implications for discovery, development and regulation, Feb 24 1999, Basel Switzerland.

American Chemical Society, Session Chair, Designing prodrugs for the hPEPT1 transporter, Mar 21-22 1999, Los Angeles, CA.

Parke-Davis PDM/PDS-INS Meeting, Optimizing oral delivery for PK and PD: research & development, Apr 6-7 1999, Summit, NJ.

Otsuka Pharmaceutical Company, Optimizing oral drug delivery: pharmacokinetic pharmacodynamic opportunities, April 15, 1999, Tokushima, Japan

Fujisawa Pharmaceutical Co., Intestinal permeation of water insoluble drugs including surfactants and human absorption of cyclosporin, April 16, 1999, Osaka, Japan.

Daiichi Pharmaceutical Co., Predicting drug absorption: advances from drug discovery, drug development and drug regulation, April 26, 1999, Tokyo, Japan.

Pfizer, Predicting drug absorption: advances from drug discovery, drug development and drug regulation, April 27, 1999, Tokyo, Japan.

Okayama University, Predicting drug absorption: advances from drug discovery, drug development and drug regulation, April 28, 1999, Okayama, Japan.

National Taiwan University, School of Pharmacy, Predicting drug absorption: advances from drug discovery, drug development and drug regulation, April 30, 1999, Taipei, Taiwan.

Membrane Transporter Conference, Designing drugs for hPEPT1 transport, August 8-12, 1999, Monte Verita, Ascona, Switzerland.

Akzonobel/NV Organon, Predicting drug absorption: implications for drug discovery, development and regulation, August 31, 1999, Oss, The Netherlands.

Almirall Prodesfarma Pharmaceutical Co., New BA/BE requirements: the Biopharmaceutic Classification System, September 2, 1999, Barcelona, Spain.

University of Valencia, Predicting oral drug absorption: implications for drug discovery, drug development and drug regulation, September 3, 1999 Valencia, Spain.

FIP World Congress, Modern biopharmaceutics: from discovery, development and regulation, September 5-7, 1999, Barcelona, Spain.

The Council for Chemical Research, Tinkering with chemistry for drug delivery, September 26-28, 1999, Baltimore, MD.

BIO-International '99 Conference (FIP), Dissolution studies as surrogate for bioequivalence, September 28-October 3, 1999, London, England.

Asian Conference and Exhibition of Controlled Release/CRS, Rational, refinement and implementation for a biopharmaceutics classification system for drug product regulation, Nov 29-December 3, 1999, Hong Kong, China.

Tohoku University, Optimizing oral delivery: new technology and pharmacodynamics, January 20, 2000, Sendai, Japan.

Dainippon Pharmaceutical Co., Optimizing oral delivery: new technology and pharmacodynamics, January 24, 2000, Osaka, Japan.

Ono Pharmaceutical Co., Optimizing oral delivery: new technology and pharmacodynamics, January 24, 2000, Osaka, Japan.

Shionogi QualiCapsule, Optimization of oral delivery: new technologies and pharmacodynamics, January 25, 2000, Osaka, Japan.

Kanazawa University, Optimization of oral delivery: new technologies and pharmacodynamics, January 27, 2000, Kanazawa, Japan

Sam Yang Company, Optimization of oral delivery: new technologies and pharmacodynamics, January 31, 2000, Taejeon, Korea.

LG Chemical Co., Optimization of oral delivery: new technologies and pharmacodynamics, January 31, 2000, Taejeon, Korea.

Monsanto Company, Optimizing oral delivery: new technology and pharmacodynamics, March 14, 2000, St. Louis, MO.

Bristol Myers Squibb, Optimizing oral delivery: new technology and pharmacodynamics, April 10, 2000, New Brunswick, NJ.

Millennial World Congress of Pharmaceutical Sciences, *In vitro* cellular systems to study drug transport, April 16-20, 2000, San Francisco, CA.

VI Congress of South American Pharmaceutical Federation (FEFAS), The Biopharmaceutics Classification System, April 24-28, 2000, Montevideo, Uruguay.

INAME – Buenos Aires – May 1, 2000

Canadian Society of Pharmaceutical Scientists (CSPS), Drug Delivery Obstacles, June 9, 2000, Vancouver, BC.

36th Annual DIA Meeting, Improvements in formulation of old and new drugs for ADHD, June 12, 2000, San Diego, CA.

Controlled Release Society Meeting, The biopharmaceutics classification system: in vitro/in vivo correlations and ER dosage forms, July 9, 2000, Paris, France.

V Pharmatech Annual Meeting, Plenary Lecture: Biopharmaceutic Classification System, Aug 1, 2000, Porto Alegre, Brazil.

AAPS/Panama National Pharmacy Meeting, Overview of Biopharmaceutics Classification System, Sept 2, 2000, Panama.

AAPS National Meeting, Implementation of a BCS for drug product regulation: development of new dissolution standards, October 29, 2000, Indianapolis, IN

NM Conference, The relationship between “e”, “i”, and “ π ”: how to find Bermuda on the map, Nov 4, 2000, Bermuda.

Amgen Pharmaceutical Co., Modern biopharmaceutics: advances in discovery, development and regulation, Nov 21, 2000, Thousand Oaks, CA

CKD Pharmaceuticals, Water insoluble (Class II) drugs: drug delivery and drug regulatory standards, Dec 8, 2000, Seoul, Korea.

Fujisawa Pharmaceutical Co., Predicting absorption of water insoluble drugs, Dec 11, 2000, Osaka, Japan.

Ajinomoto Company, Predicting oral drug absorption, Dec 12, 2000, Kawasaki, Japan.

Daiichi Pharmaceutical Co., Predicting absorption of water insoluble drugs, Dec 13, 2000, Tokyo, Japan.

Tohoku University, New approaches to bioequivalence regulation: BCS and Beyond, Dec 14, 2000, Sendai, Japan.

SEFIG V Congress, Modern bioequivalence requirements: BCS and future extensions, , Feb 4-7, 2001, Valencia, Spain.

Andrx Corp., New bioequivalence standards based on the Biopharmaceutic Classification System, Feb 19, 2001, Ft.Lauderdale, FL.

Pharmaceutical Congress of the Americas, Molecular determinants of oral drug delivery, March 24-29, 2001, Orlando, FL.

Daiichi Pharmaceutical Co., Modern molecular biopharmaceutics: from genes to absorption, Apr 18, 2001, Tokyo, Japan.

Sankyo Pharmaceutical Co., Modern molecular biopharmaceutics: from genes to absorption, April 19, 2001, Japan

Taisho Pharmaceutical Co., Modern molecular biopharmaceutics: from genes to absorption, , Apr 20, 2001, Japan

Otsuka Pharmaceutical Co., Modern molecular biopharmaceutics: from genes to absorption, , Apr 23, 2001, Japan

Sumitomo Pharmaceutical Co, Modern molecular biopharmaceutics: from genes to absorption, April 24, 2001 Japan

Kanazawa University, Modern molecular biopharmaceutics: absorption to genes, May 14, 2001, Kanazawa, Japan.

Fujisawa Pharmaceutical Co., Modern molecular biopharmaceutics: from absorption correlations to gene expression, May 17, 2001, Osaka, Japan.

Uppsala University Honorary PhD, Modern biopharmaceutics: absorption and genes, May 31, 2001, Uppsala, Sweden.

EUFEPS/World Congress, Gastrointestinal dissolution and drug absorption; Conclusions and Closing Remarks, Future perspectives on drug delivery, Jun 19, 2001, Copenhagen, Denmark.

Controlled Release Society—Eurand Award 2001 Special Session, Keynote Speaker, Modern Molecular Biopharmaceutics, June 26, 2001, San Diego, CA.

Mahidol University, The Biopharmaceutic Classification System: extensions to class II and III drugs, Aug 31, 2001, Bangkok, Thailand.

FIP Bio-International Conference, Modern molecular biopharmaceutics: from genes to absorption, Sept 4, 2001, Singapore.

The University of Michigan, College of Pharmacy, The role of science in international pharmaceutical product standards: evolution of bioequivalence standards, Sept 10, 2001, Ann Arbor, MI.

EUFEPS Decennial Anniversary Conference, The biopharmaceutical assessment of NCE candidates, Sept 20, 2001, Strasbourg, France.

Federacion Farmaceutica Centroamericana y del Caribe (FFCC) Conference, Modern bioequivalence requirements: the role of drug product dissolution, Nov 28-30, 2001, Guatemala City, Guatemala.

Australian Pharmaceutical Science Association Conference, History and application of the biopharmaceutic classification system; Speeding preclinical development: how to pick the right molecule, December 9-12, 2001, Melbourne, Australia.

Seoul National University, Modern molecular biopharmaceutics: genes to absorption, Jan 16, 2002, Seoul, Korea.

Fujisawa Pharmaceutical Co., Modern biopharmaceutics: molecular biopharmaceutics to *in vivo* performance, Jan 21, 2002, Osaka, Japan.

Daiichi Pharmaceutical Co., Modern biopharmaceutics: molecular biopharmaceutics to *in vivo* performance, Jan 23, 2002, Osaka, Japan.

University of Southern California/USC Drug Development Research Center, Distinguished Lectures Series, Molecular biopharmaceutics and drug targeting, Feb 11, 2002, Los Angeles, CA.

International Conference on Drug Development (ICDD) Meeting, *In vitro* standards for ensuring drug product performance *in vivo*, Feb 18-21, 2002, Austin, TX.

Health Industry Group Purchasing Association (HIGPA), 2002 National Pharmacy Forum, Pharmaceutical innovations: the road ahead, Feb 20-21, 2002, New Orleans, LA.

USP/Biopharmaceutics Expert Committee, BCS Extension, Feb 27, 2002, Rockville, MD.

Ajinomoto Pharmaceutical Co., Modern biopharmaceutics: from drug discover, development and regulation, Apr 23, 2002, Kawasaki, Japan.

University of Kentucky--Post-Graduate Conference, Keynote speaker: Molecular biopharmaceutics: genes to absorption, May 8-10, 2002, Lexington, Kentucky.

Inhale Therapeutic Systems, Modern molecular biopharmaceutics and targeting, May 27-29, 2002, San Carlos, CA.

Chinese Pharmaceutical Association/AAPS/FIP Joint Conference, Modern drug delivery and development; Biopharmaceutic Classification System in drug development and regulations, Jul 15-17, 2002, Beijing, China.

NIGMS Pharmacological Sciences Meeting, Pharmacological sciences—schools of pharmacy, Aug 8-9, 2002, Bethesda, MD.

Fujisawa Pharmaceutical Co., The Biopharmaceutic Classification System extensions and bioequivalence regulations; The importance of evaluating permeability and solubility for drug discovery and optimization of NCEs, Dec 6, 2002, Osaka, Japan.

2nd International Congress on Drug Absorption, Transport and Delivery (Co-Chair):
Workshop--New Molecular Technologies in Biopharmaceutics, Jan 22, 2003, Waikiki, Hawaii.

2nd International Congress on Drug Absorption, Transport and Delivery (Co-Chair):
Symposium--Molecular Biopharmaceutics: A New Era in Drug Absorption Transport and Delivery, Jan 23-24, 2003, Waikiki, Hawaii.

I Congress of the Portuguese Society of Pharmaceutical Sciences, Molecular Biopharmaceutics and drug targeting: from genes to therapy, Apr 13-16, 2003, Lisbon Portugal.

Curso International Workshop, FIP/AAPS, BCS-concepts and application for biowaiver, June 9-11, 2003, Sao Paulo, Brazil.

Fujisawa Pharmaceutical Co., Modern biopharmaceutics: dissolution, absorption and regulation, Jul 7 2003, Osaka, Japan.

University of Tokyo, Modern biopharmaceutics: dissolution, absorption and regulation, Jul 11 2003, Tokyo, Japan.

American Association of Pharmaceutical Scientists, “Targeted Drug Delivery in Cancer therapy Symposium”, Recent advances in prodrug targeting technology, National Meeting, Oct 26-30 2003, Salt Lake City, UT.

Asociacion Farmaceutica Mexicana (AFM) Annual Pharmaceutical Sciences Congress, FDA Criteria Concerning Pharmaceuticals—Panel Member, Nov 2-6, 2003, Cancun, Mexico.

Pfizer Inc., Drug targeting using transporters and enzymes: antiviral and anticancer nucleoside prodrugs, Feb 10, 2004, La Jolla, CA.

RTP DMDG Drug Transport Symposium (GSK), Biopharmaceutics Classification System: extensions and international application, Feb 23-25, 2004, Raleigh/Durham, NC.

University of Mainz, Transport, activation and targeting of nucleoside prodrugs, Feb 27, 2004, Mainz, Germany.

5th Intl. Conf. & workshop on cell culture and *in vitro* models for drug absorption and delivery, Molecular biopharmaceutics: a new era, Mar 1, 2004, Saarland University, Saarbrucken, Germany.

Fujisawa Pharmaceutical Co., Modern biopharmaceutics: transport, activation and targeting of nucleoside prodrugs, Mar 12, 2004, Osaka, Japan

Daiichi Pharmaceutical Co., Estimating biopharmaceutical properties of candidate drugs, Mar 15, 2004, Tokyo, Japan.

Purdue University, Modern molecular pharmaceuticals: a new era, Apr 13, 2004, W. Lafayette, IN.

EUFEPS Conference, Transporters and enzymes for nucleoside prodrug delivery, Apr 19-21, 2004, Copenhagen, Denmark.

IVAX Pharm Inc., The BCS and bioequivalence: development and future extensions, Apr 26, 2004, Opava, Czech Republic.

Korean Food & Drug Administration, The Biopharmaceuticals Classification System: extensions and international applications, May 24, 2004, Seoul, Korea.

Globalization of Pharmaceutics Education Network (GPEN2004)--Short Course 2: Opening/Overview; Lecture--Drug targeting with membrane transporters and enzymes, May 28, 2004, Kyoto, Japan.

Pharmaceutical Sciences World Congress (PSWC2004), Chair of Plenary Lecture 4; Lecture – Biopharmaceuticals classification system: genesis and metamorphosis, June 1, 2004, Kyoto, Japan.

FIP/AAPS/CPA Symposium, Session 1 moderator; Lecture: A mechanistic approach for oral drug delivery: predicting oral drug absorption, June 7, 2004, Nanjing, China.

American Chemical Society National Meeting, Membrane transporters and prodrug activating enzymes: modern molecular pharmaceuticals, Aug 22, 2004, Philadelphia, PA.

8th International Workshop on Bioavailability & Bioequivalence of Medicaments: BCS and *in vitro* BE; BCS examples and WHO essential drugs, Oct 1-3, 2004, Buenos Aires, Argentina.

Mexican Pharmaceutical Association (AFM), Dissolution as bioequivalence predictor, Oct 23-25, 2004, Acapulco, MX.

DRA Minisymposium (honoring Henning Kristensen), A new era in biopharmaceuticals: BCS implication from drug discovery to drug product regulation, Oct 27, 2004, Copenhagen, Denmark.

2004 FEFAS Congress, Plenary Lecture—The BCS: implications for *in vitro* bioequivalence (BE); Lecture—BCS examples and WHO essential drugs classification, Oct 29-Nov 1, 2004, Bogota, Columbia.

AAPS/FIP/TUFTAD Workshop, BCS—concepts and application for “biowaiver”, Nov 29-30, 2004, Istanbul, Turkey.

Biopharmaceutic Classification System Workshop – Mar 31-Apr 8, 2005, Santiago, Chile.

EUFEPS, 3rd World Conference on Drug Absorption, Transport & Delivery; session leader; lecture: Dissolution bioequivalence and BCS: a new era oral IR product regulation, Apr 18-20, 2005, Barcelona, Spain.

FDA Science Forum 2005, Predicting oral drug absorption and bioavailability: fiction and facts, Apr 27-28, 2005, Washington, DC

Canadian Society for Pharmaceutical Sciences Symposium, Molecular pharmaceuticals in drug discovery and development: a new era, May 30-Jun 2, 2005, Toronto, Canada.

2nd International Symposium on Scientific and Regulatory Aspects of Dissolution and Bioequivalence, BCS: The new science of bioequivalence, Jun 3-5, 2005, Athens, Greece.

BioMedical Transporters 2005 Conference, Drug targeting using membrane transporters and activating enzymes: application to anticancer and antiviral nucleoside drugs, Aug 13-18, 2005, St. Gallen, Switzerland.

University of Iowa, Modern biopharmaceutics: membrane transport and activation of prodrugs, September 12, 2005, Iowa City, IA.

APSTJ 20th Anniversary Symposium, Harmonization: BCS, Sept 26-27, 2005, Yokohama, Japan.

German Pharmaceutical Society, Improving oral absorption via carriers and prodrug activating enzymes, Oct 6-8, 2005, Johannes Gutenberg University, Mainz, Germany.

Biointernational 2005, BCS: essential drug lists, biowaivers, Oct 24-26, 2005, Royal Pharmaceutical Society, London, England.

Mexican Pharmaceutical Association (AFM) National/International Meeting, BCS, drug product dissolution and BE, Nov 27-Dec 1, 2005, Galeria Plaza Hotel, Veracruz, Mexico.

United Kingdom & Ireland Controlled Release Society (UKICRS), Molecular pharmaceuticals: a new era (Keynote speaker), Jan 6, 2006, AstraZeneca Charnwood, Loughborough, UK.

FDA Quality by Design Short Course, Biopharmaceutic Classification System (BCS), Feb 20-21, 2006, Gaithersburg, MD.

European Drug Absorption Network (EDAN) Conference, Modern biopharmaceutics, a new era (plenary lecture), Mar 19-21, 2006, Leuven, Belgium.

American Chemical Society (ACS) National Meeting, Molecular pharmaceuticals strategies for targeting transporters and enzymes in the GI tract, March 29, 2006, Georgia World Congress Center, Atlanta, GA.

EUFEPS Conference, Keynote-Solubility and bioavailability: from discovery, development and regulation, April 26-27, 2006, Verona, Italy.

Kyoto University, Modern biopharmaceutics: a new era, May 22, 2006, Kyoto, Japan.

Consortium, BCS Class I permeability determinations and FDA biowaivers, May 23, 2006, Kyoto Station.

APISXX Regional Meeting, Co-chair/speaker – A provisional BCS of the top 200 drug products in US, GB, Spain, Japan and Korea, Intl. Convention Center, May 25-27, 2006, Jeju Island, Korea.

Controlled Release Society, Genomics and proteomics: a new era in drug delivery, July 24-27, 2006, Vienna, Austria.

EUFEPS Conference, Predicting human absorption (and bioavailability?): how good is the rat?, Sept 25-28, 2006, Copenhagen, Denmark.

2006 Gerhard Levy Distinguished Lectureship, Molecular biopharmaceutics: a new era in drug delivery, Oct 12, 2006, State University of New York at Buffalo, Buffalo, NY.

International Regulatory Workshop on Bioequivalence and Dissolution, Biopharmaceutics Classification System (BCS): concepts and application to biowaivers, Oct 19-20, 2006, Budapest, Hungary.

AAPS Annual Meeting, BCS—Current use in human drug development and potential use in veterinary drug development (Workshop), Oct 28-Nov 2, 2006, San Antonio, TX.

Round Table; Regional considerations.

Presidential Debate; “No, Pharma should not advertise directly to the public”.

AAPS/CNQFP Bioequivalence & Dissolution Workshop, Biopharmaceutics Classification System: Scientific Principle; BCS-comparison of WHO essential medicine drug list, Nov 13-14, 2006, Mexico City, MX.

AAPS/BCS Workshop, Biopharmaceutical Classification System (BCS): concepts and applications to biowaivers, Mar 11-17, 2007, Smolensk, Russia.

Novartis Pharmaceuticals, The Biopharmaceutics Classification System: scientific principles; Future directions of BCS, Mar 30, 2007, East Hanover, NJ.

6th Birthday Celebration Symposium (Wolfgang Sadee), Nucleoside prodrug targeting to intestinal transporters, Mar 25-26, 2007, Columbus, OH.

Chinese International Pharmaceutical Technology Conference (CIPTC), BCS system, solubility and drug dissolution considerations relating to absorption from oral controlled release dosage forms; science based regulation of oral controlled release dosage forms, May 10-13 2007, Shanghai, China.

Daiichi-Sankyo Pharmaceutical Co., The Biopharmaceutics Classification System: a new era in bioequivalence, May 14, 2007, Tokyo, Japan.

Astellas Pharmaceutical Co., The Biopharmaceutics Classification System: a new era in bioequivalence, May 15, 2007, Tokyo, Japan.

Otsuka Pharmaceutical Co., The Biopharmaceutics Classification System: a new era in bioequivalence, May 16, 2007, Tokushima, Japan.

Dainippon-Sumitomo Pharmaceutical Co., The Biopharmaceutics Classification System: a new era in bioequivalence, May 17, 2007, Osaka, Japan.

AAPS/BE, BCS Workshop, Counter-point: BCS Class III biowaivers: should we allow?, May 21-23, 2007, Bethesda, MD.

4th World Conference on Drug Absorption, Transport & Delivery, Bioequivalence regulation: a new era in biopharmaceutics, Drug delivery using cellular transporter and activation pathways, June 15-20, 2007, Kanazawa, Japan.

11th FEFAS Conference, Bioavailability and Bioequivalence: scientific and regulatory aspects, Medicine Stability, August 9-11, 2007, Foz do Igacu, Brazil.

CDE/SFDA, The science of bioequivalence: BCS and insuring pharmaceutical product quality, September 7, 2007, Beijing, China.

Dissolution Testing of Oral Dosage Forms, Biopharmaceutics Classification System, September 10, 2007, Shanghai, China.

Hangzhou Drug Control Institute Seminar, The science of bioequivalence: BCS and insuring pharmaceutical product quality, September 11, 2007, Hangzhou, China.

Zhejiang University Seminar, The science of bioequivalence: BCS and insuring pharmaceutical product quality, September 12, 2007, Hangzhou, China.

AAPS National Meeting, Distinguished Scientist Video Series (taping session), November 10, 2007, San Diego, CA.

Fiore Tokyo, Shinjuku, The Biopharmaceutics Classification System: Recent advances and regulatory approvals, January 23, 2008, Tokyo, Japan.

Wayne State University Seminar, Molecular biopharmaceutics: Where drug discovery meets development, April 2, 2008, Detroit, MI

University of Edmonton, Modern biopharmaceutics: A new era, May 20, 2008, Edmonton, Canada.

11th Annual CSPS Meeting, Intestinal permeation: Prodrug transport and activation by intestinal mucosal cells; Molecular biopharmaceutics: A new era, May 24, 2008, Banff, Canada.

FDA BCS Committee Meeting, BCS and biowaivers for Class III Drugs, June 20, 2008, Rockville, MD.

PGSRM, Insuring the quality of pharmaceutical products on the worlds markets today: BCS, BE and public policy, June 27, 2008, University of Michigan, Ann Arbor, MI

Sungkyunkwan University (SKKU), Molecular biopharmaceutics: A new era, August 11, 2008, Seoul, Korea.

Hanmi Pharmaceutical Co. Ltd., Molecular Biopharmaceutics: The big “A” enters the molecular era, August 13, 2008, Seoul, Korea.

Grand Hilton Seoul Hotel, Alumni Dinner to honor Dr. Amidon, August 13, 2008, Seoul, Korea.

Shibuya, Nagai Memorial Hall, Formulation Technology – Alchemy of Science Meeting, Pharmaceutical & regulatory strategies for oral delivery of BCS Class II & Class III Drugs, October 20, 2008, Tokyo, Japan.

Shanghai Zhangjian Pharma Valley Professional Training Center, The Biopharmaceutics Drug Classification System (BCS) from Theory to Applications in Product Development, October 23, 2008, Shanghai, China.

State Food and Drug Administration, The Biopharmaceutics Drug Classification System (BCS) from Theory to Applications in Product Development, October 30, 2008, Hangzhou, China.

Pfizer-Groton, The Biopharmaceutics Classification System: A New Era in Bioequivalence (BE) Standards; Dissolution: A New Paradigm for an Old Science, April 8, 2009, Groton, CT.

Rutgers, The State University of New Jersey, Molecular ADME: A New Era in Mechanistic Biopharmaceutics, April 22, 2009, New Brunswick, NJ.

Boehringer Ingelheim, Towards In Vivo Relevant Dissolution: A New Paradigm for An Old Science, April 23, 2009, Danbury, CT.

AAPS NERDG, Biopharmaceutics: Renaissance of an Old Science, April 24, 2009, Hartford, CT.

AAPS Workshop on Evolving Science and Technology in Physical Pharmacy and Biopharmaceutics, The Renaissance of Biopharmaceutics, May 13, 2009, Baltimore, MD.

APSTJ Alumni Meeting, Making Dissolution Relevant: A New Paradigm for An Old Science, May 21, 2009, Japan.

Pharmaceutical Science and Clinical Pharmacology Advisory Committee Meeting, Evolving Science for BE Studies, August 3-4, 2009, Silver Spring, MD.

Sepracor Seminar, Biopharmaceutics:Molecular ADME, A New Era, September 21-22, 2009, Marlborough, MA.

AAPS National Meeting, Predicting Oral Drug Absorption:Fiction and Facts (PPB &PPDM). November 12, 2009, Los Angeles, CA.

Dissolution Workshop, Challenges in Dissolution Testing: Equivalence and Surrogates, The Biopharmaceutics Classification System (BCS) From Theory to Application in Product Development, Application of the BCS to Support the Safety and Efficacy of Alternate Medicines, December 9 & 10, 2009, Rhodes University, Grahamstown, South Africa.

The Renaissance of Biopharmaceutics: Implications for MR Dosage Forms IDDSRG, May 5- 6, 2010, Seoul, South Korea.

AAPS Webinar, The Scientific Basis of Oral Absorption: Solubility, Permeability, Dissolution and Application to BCS, May 11, 2010.

2nd Asian Arden Conference, BCS and Implications for Drug Formulations, Shenyang, China, June 12-13, 2010.

2nd International Regulatory Workshop on Bioequivalence, Bioanalysis, Dissolution and Biosimilarity, Prediction of Solubility and Permeability Class Membership: Provisional BCS Classification of the World's Top Oral Drugs, Budapest, Hungary, June 21-22, 2010.

University Lecture, Biopharmaceutics of oral drug delivery:low solubility drugs and in vivo dissolution, Frankfurt Germany, June 22, 2010.

University at Graz, Biopharmaceutics of oral drug delivery:low solubility drugs and in vivo dissolution, Graz, Germany, July 1, 2010.

Farmacia da Universidade de Lisboa, Renaissance of Biopharmaceutics, Lisboa, Portugal, July 15, 2010.

Twelfth Buffalo Pharmaceutics Symposium, Exploiting Intestinal Transporters:The route into the body, Buffalo, New York, July 29-31, 2010.

AAPS Conference, Prediction of BCS Class Membership and Toward a BE Dissolution Specification: Regulatory Application, New Orleans, LA, November 18, 2010.

KSPST Conference, Plenary Lecture, The new science of bioequivalence:What have we been neglecting all these years?, Seoul, South Korea, December 2, 2010.

University of Mainz, Biopharmaceutics, bioequivalence, and labeling:The scientific basis for a new pharmaceutical standard for providing the patient with a quality oral product, Mainz, Germany, December 8, 2010.

Controlled Release Society Product Development Forum, Pros and cons of BCS in drug discovery, Miami, Florida, January 27-29, 2011.

University of Mainz, BCS and absorption of Class III low permeability drugs: mechanistic membrane transport, Mainz, Germany, February 4, 2011.

Universidad Miguel Hernandez Workshop, BCS: Scientific basis for *in vitro* bioequivalence; Provisional BCS classification of WHO essential medicines, Alicante, Spain, February 17-18, 2011.

University of Zurich, The biopharmaceutical classification system (BCS): A new era in BE; Towards *in vivo* relevant dissolution: A new paradigm for an old science, Zurich, Switzerland, March 15, 2011.

Sanofi Aventis, BCS in drug discovery, development and regulation, Hoechst, Germany, May 4, 2011.

Astrazeneca Meeting, A physiological gastric emptying model and C_{max} variation for a BCS Class I drug product, Gothenberg, Sweden, May 23, 2011.

Uppsala University Workshop, A physiological gastric emptying model and C_{max} variation for a BCS Class I drug product, Stockholm, Sweden, May 26, 2011.

Chinese Pharmaceutical Association International Workshop on Bioavailability/Bioequivalence, Biopharmaceutics, a new era: Implications for (oral) drug development and regulation, Shanghai, China, June 20-22, 2011.

International Symposium on BA/BE of Oral Drug Products, Keynote Lecture: New era in BA/BE world, Consideration of biowaivers extensions for BCS Class II and III drugs: the impact of drug dissolution rates, gastric emptying time, regional pH in GI tract to drug absorption, Kobe, Japan, June 29-July 1, 2011.

CRS Annual Meeting, Plenary Panel Discussion, Plenary Talk, Optimal oral delivery: from empiricism to mechanism, National Harbor, MD, July 30-August 3, 2011.

BCS Workshop, The Biopharmaceutics Classification System (BCS) and *in vitro* Bioequivalence Dimensionless Number and Prediction of Solubility and Permeability Class Membership: Provisional BCS Classification, Cordoba, Argentina, October 10-14, 2011.

AAPS Annual Meeting, New Era of Biopharmaceutic Understanding of BA and BE, A BCS Based Dissolution Methodology for Drug Development, Washington, D.C. October 24-27, 2011.

USP PFI Workshop, Is There a Need for a Pediatric Biopharmaceutical Classification System? Biopharmaceutical Classification System Working Group, Potomac, MD, November 1-2, 2011.

AAPS Conference, BCS and Drug Product Dissolution: Evolution of New World Standards Rhodes University, Grahamstown, South Africa, December 7-8, 2011.

International Symposium PPF Molecular Pharmacokinetics, Oral Absorption of BCS Class III Drugs: Enhanced Carrier Mediated Transport and Activation of Antiviral Prodrugs, Tokyo, Japan, January 14-21, 2012.

Amgen Workshop, Mechanism intestinal permeability, determination a, and absorption of soluble drugs, A BCS based dissolution methodology for drug development, In silico log (PC) and log (Sol) estimates, Thousand Oaks, CA, March 7-8, 2012.

Kanazawa University, Pharmaceutical Science (Worldwide), Kanazawa, Japan, March 29, 2012.

Setsunan University, Pharmaceutical Science (Worldwide), Osaka, Japan, April 20, 2012.

ICAR, Prodrugs of neuraminidase inhibitors with high oral bioavailability, Sapporo, Japan, April 16-19, 2012.

Mochida Pharmaceutical Co., BCS from theory to applications in drug discovery and product development, Mishima, Japan, April 26, 2012.

University of Tokyo, Oral absorption of BCS Class III drugs: enhanced carrier mediated transport and activation of antiviral drugs, Tokyo, Japan, May 8, 2012.

Taisho, BCS based bioperformance dissolution and bioequivalence, Tokyo, Japan, May 9, 2012.

Chinese University Professional Workshop, BCS: theory to application in pharmaceutical products, predicting BE from in vitro dissolution tests, BCS from theory to applications in pharmaceutical product development and quality control, Predicting BE from in vitro dissolution, Hong Kong, China, May 11-14, 2012.

Ono, Oral absorption of BCS Class III drugs: enhanced carrier mediated transport and activation of antiviral drugs, Osaka, Japan, May 18, 2012

Asehi Kasei, Strategy for prediction of intestinal absorption: from physicochemical property and in vitro permeability study, Mishima, Japan, May 23, 2012.

Academy of Pharmaceutical Science and Technology Japan (APSTJ), Bio-performance dissolution (A case for investigating and extending the utility of dissolution testing), Kobe, Japan, May 24-26, 2012.

Kanazawa University, Oral absorption of BCS Class III drugs: enhanced carrier mediated transport and activation of antiviral drugs, Kanazawa, Japan, May 31, 2012.

Budapest, Hungary, Harmonizing International BE Standards, June 4-6, 2012

Mainz, Germany, BE Lecture, Johannes Gutenberg University, June 14-15, 2012

Lisbon, Portugal, Jose Morais Symposium, June 20-22, 2012

Land-O-Lakes Conference, Madison, WI Uptake Targeters as a target for improving bioavailability, September 10-14, 2012

BE/BCS Workshop, Araraquara, Brazil, September 28-October 7, 2012.

AAPS Annual Meeting Keynote presentations, 21st Century Oral Bioperformance, October 14-18, 2012, Chicago, IL.

SEFIG, Plenary Conference, The Science-Policy Dynamic Insuring Pharmaceutical Product Discovery, Development, Regulation, February 6-8, 2013, Alicante, Spain.

Louis W. Busse Lectures, A Century of Conflation, Confusion, and Global Warming: Biopharmaceutical Product Standards; Improving the Oral Absorption of BCS Class III and IV Drugs, University of Wisconsin, May 8-10, 2013, Madison, WI.

FDA/ASCPT Abrams Lecture, The Science-Policy Dynamic Insuring Pharmaceutical Product Quality and Interchangeability: BCS Discovery, Development, Regulation, May 28-30, 2013, Silver Spring, MD.

PUBLICATIONS

1. M.A. Schwartz and G.L. Amidon, Reaction of aspirin with amines: potential mechanism for aspirin allergy, J. Pharm. Sci., 55, 1464 (1966).
2. A. Korolkovas, J.A. Burckhalter and G.L. Amidon, Interatomic distances and bond angles of substrates of succinate dehydrogenase: contribution to the chemotherapy of Chagas' disease, Rev. Farm. Bioquim., 9, 1935 (1971).
3. S.H. Yalkowsky, G.L. Flynn and G.L. Amidon, Solubility of nonelectrolytes in polar solvents, J. Pharm. Sci., 61, 983 (1972).
4. P.G. Welling, W.A. Craig, G.L. Amidon and C.M. Kunin, The pharmacokinetics of trimethoprim and sulfamethoxazole in normal subjects and in patients with renal failure, J. Infect. Dis., 126, 5556 (1973).
5. P.G. Welling, W.A. Craig, G.L. Amidon and C.M. Kunin, Pharmacokinetics of cefazolin in normal and uremic subjects, Clin. Pharm. Therap., 15, 344 (1973).
6. G.L. Amidon, Theoretical calculations on an acetic acid, 5-methylimidazole methanol hydrogen bond network: a model charge relay system. J. theor. Biol., 46, 101 (1974).
7. G.L. Amidon, Comparison of theoretical absolute, interaction energies with heats of complexation in carbon tetrachloride, J. Pharm. Sci., 63, 1514 (1974).
8. G.L. Amidon, Theoretical calculations of heats of complexation in the solvent carbon tetrachloride, J. Pharm. Sci., 63, 1520 (1974).
9. G.L. Amidon, Structure and reactivity of the theobrominate and theophyllinate complexes methyl-trans-cinnamate, J. Pharm. Sci., 63, 1524 (1974).
10. G.L. Amidon and S.H. Yalkowsky and S. Leung, Solubility of nonelectrolytes in polar solvents II: solubility of aliphatic alcohols in water, J. Pharm. Sci., 63, 1858 (1974).

11. S.H. Yalkowsky, G.L. Amidon, G. Zografi and G.L. Flynn, Solubility of nonelectrolytes in polar solvents III: alkyl *p*-aminobenzoates in polar and mixed solvents, J. Pharm. Sci., 64, 48 (1975).
12. G.L. Amidon, M.J. Paul and P.G. Welling, Model independent prediction methods in pharmacokinetics: theoretical considerations, Math. Biosci., 25, 259 (1975).
13. J.E. Birnbaum, P.W. Abel, G.L. Amidon and C.K. Buckner, Changes in mechanical events and adenosine 3',5'-monophosphate levels induced by enantiomers of isoproterenol in isolated rat atria and uteri, J. Pharmacol. Exp. Ther., 194, 396 (1975).
14. G.L. Amidon, S.H. Yalkowsky, S.T. Anik and S.C. Valvani, Solubility of nonelectrolytes in polar solvents V: estimation of the solubility of aliphatic monofunctional compounds in water using a molecular surface area approach, J. Phys. Chem., 79, 2239 (1975).
15. S.D. Valvani, S.H. Yalkowsky and G.L. Amidon, Solubility of nonelectrolytes in polar solvents VI: refinements in molecular surface area computations, J. Phys. Chem., 80, 829 (1976).
16. G.L. Amidon and S.T. Anik, A comparison of several molecular topological indexes with molecular surface area in aqueous solubility estimation, J. Pharm. Sci., 65, 801 (1976).
17. S.H. Yalkowsky, S.C. Valvani and G.L. Amidon, Solubility of nonelectrolytes in polar solvents IV: Nonpolar drugs in mixed solvents, J. Pharm. Sci., 65, 1488 (1976).
18. P.G. Welling, L.L. Lyons, R. Elliott and G.L. Amidon, Pharmacokinetics of alcohol following single low doses to fasted and nonfasted subjects, J. Clin. Pharmacol., April, 199 (1977).
19. G.L. Amidon, R.S. Pearlman and S.T. Anik, The solvent contribution to the free energy of protein-ligand interactions, J. Theor. Biol., 77, 161 (1979).
20. G.L. Amidon and S.T. Anik, Hydrophobicity of polycyclic aromatic compounds: thermodynamic partitioning analyses, J. Phys. Chem., 84, 970 (1980).
21. G.L. Amidon, G.D. Leesman and R.L. Elliott, Improving intestinal absorption of water-insoluble compounds: a membrane metabolism strategy, J. Pharm. Sci., 69, 1363 (1980).
22. G.L. Amidon, J. Kou, R.L. Elliott and E.N. Lightfoot, Analysis of models for determining intestinal wall permeabilities, J. Pharm. Sci., 69, 1369 (1980).
23. R.L. Elliott, G.L. Amidon and E.N. Lightfoot, A convective mass transfer model for determining intestinal wall permeabilities: laminar flow in a circular tube, J. Theor. Biol., 87, 757 (1980).
24. G.L. Amidon, J. Reichert and C.A. Johnson, Adsorption of insulin to the polyvinyl chloride surface of CADP solution containers, Vol. 10, Clinical Dialysis and Transplant Form (1981).
25. G.L. Amidon, J. Taylor and R. Sorkness, A convective diffusion model for estimating drug loss to tubing: sorption of vitamin A, J. Parent. Sci. Technol., 35, 13 (1981).
26. G.L. Amidon and C. Buckner, On the use of a dynamic approach to the estimation of dissociation constants for reversible competitive antagonists, J. Pharmacol. Exp. Therap., 216, 352 (1981).
27. G.L. Amidon and S. Anik, Application of the surface area approach to the correlation and estimation of aqueous solubility and vapor pressure: Alkyl aromatic hydrocarbons, J. Chem. Eng. Data, 26, 28 (1981).

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35. A. Selen, G.L. Amidon and P.G. Welling, Pharmacokinetics of probenecid following oral doses to human volunteers, J. Pharm. Sci., 71, 1238 (1982).
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37. L. Van Campen, G.L. Amidon and G. Zografi, Moisture sorption kinetics for water-soluble substances I: Theoretical considerations of heat transport control, J. Pharm. Sci., 72, 1381 (1983).
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44. J.B. Dressman and G.L. Amidon, Radiotelemetric method for evaluating enteric coatings *in vivo*, J. Pharm. Sci., 73, 935 (1984).

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J-S Kim, S. Mitchell, P. Kijek, C. McKenna, B. Kashemirov, U. Eriksson, J Breitenbach, K. Borysko, G.L. Amidon, J. Drach and J. Hilfinger, Stability, transport, and activation of cidofovir peptide prodrugs, Antivir.Res. 2006, 70, A58, 19th International Conference on Antiviral Research, May 7-11, 2006, San Juan, Puerto Rico.

J. Hilfinger, Z. Wu, J-S King, S. Mitchell, J. Breitenbach, G.L. Amidon and J. Drach, Vidarabine prodrugs as anti-px virus agents, Antivir.Res. 2006, 70, A60, 19th International Conference on Antiviral Research, May 7-11, 2006, San Juan, Puerto Rico.

Y. Tsume, J.M. Hilfinger and G.L. Amidon, Floxuridine prodrug developments: its transporter affinity and its activation by enzyme, AAPS Abstract, Annual Meeting, Oct 28-Nov 2, 2006, San Antonio, TX.

J.J. Sheng and G.L. Amidon, What is representative of *in-vivo* dissolution buffers: a comparison of phosphate and bicarbonate?, AAPS Abstract, Annual Meeting, Oct 28-Nov 2, 2006, San Antonio, TX.

P. Yang and G.L. Amidon, Evaluation of DPP IV as a potential target for prodrug activation and selectivity, AAPS Abstract, Annual Meeting, Oct 28-Nov 2, 2006, San Antonio, TX.

U. Eriksson, C.J. Provoda, J.M. Hilfinger, C.E. McKenna, K-D Lee, and G.L. Amidon. Improving oral absorption of antiviral drugs: transport and activation of a cyclic cidofovir prodrug. Pharmaceutical Sciences World Congress 2007, Apr 22-25, 2007, Amsterdam, The Netherlands.

H. Sabit, X. Song, C.P. Landowski, K-D Lee, and G.L. Amidon. Utilization of biotinylated fluorophosphanate probe in prodrug-activating enzyme identification. Pharmaceutical Sciences World Congress 2007, Apr 22-25, 2007, Amsterdam, The Netherlands.

D. Gupta, S. Varghese, A. Dahan, K.-D. Lee, J. M. Hilfinger. G.L. Amidon, Double ester prodrugs of an antiviral agent for enhanced oral delivery. Accepted for PGSRM Annual Meeting, 2008, Ann Arbor, MI.

D. Gupta, K.-D. Lee, J. M. Hilfinger, G.L. Amidon. Enhanced oral delivery of double ester prodrugs of guanidine oseltamivir carboxylate (GOCarb), an antiviral agent. Submitted for AAPS Annual Meeting, 2008, Atlanta, GA.

S. Varghese, K.-D. Lee, J. M. Hilfinger, G.L. Amidon. Improving oral absorption of zanamivir: exploiting mucosal cell transport and activation mechanisms. Submitted for AAPS Annual Meeting, 2008, Atlanta, GA.

J.S. Kim, E. Lipka, J.M. Hilfinger, G.L. Amidon. A three-tiered BCS screening approach to maximize chances for BCS biowaiver approval. Presented at the 23rd APSTJ Annual Meeting by J.S. Kim, Sapporo, Japan, May 2008.

NIH GRANT REVIEWS

ZRG1 DKUS-A 58 R, Challenge Grant Editorial Panel 18, July 20-21, 2009

**Gordon L. Amidon –
Grad. Students/Researchers**

Former Graduate Students (2006-2011)

Jing Sun (Med. Chem.)
Haili Ping (chair)
Chasity Andrews (co-adv/Lee)
Jonathan Miller (chair)
Hairat Sabit (co-adv/Lee)
Ke (Katherine) Ma (co-adv/Smith)

Former Member Dissertation Committee

Adivaraha Jayasankar (Rodriguez)
Pen-Chung Chen (Rosania)
Zheng Lu (Smith)
Gladys Granero (Ciudad Univ., Argentina)

Current Member Dissertation Committee

Brian Kreig
Deanna Mudie

Past Member Dissertation Committee

Lilly Roy
Chinmey Maheshwari
Maria Posada
Bei Yang
Bryan Newman
Xioamei Chen
Jamie Connarn
Kefeng Sun

Former Research Fellows (2005-2008)

Arik Dahan
Sheeba Varghese
Deepak Gupta
Hairat Sabit
Jing Sun

Current Research Fellows (2011)

Current Research Assistant (2005-2011)

Former Research Fellows (cont)

Xueqin Song (China)
Ikumi Tamai (Kanazawa Univ., Japan)
Yayoi Hayashi (Nagoya City Univ, Japan)
Josef Tukker (Univ Utrecht, The Netherlands)
Shinji Yamashita (Setsunan Univ., Japan)
Hiroshi Kikuchi (Daiichi Phrm. Co., Japan)
Ulrika Eriksson (Uppsala Univ., Uppsala, Sweden)
Zhiqian Wu (Long Island Univ., NY)
James Chu (Syntex, Calif)
Shun-Yih Lin
Xiaoyan (Rebecca) Chu (Univ Tokyo, Japan)

Ho-Chul Shin (Korean Res.Inst.Tech., Korea)
Balvinder Vig (Bristol Myers Squibb)
Young Hoon Kim (Korean FDA)

Former Visiting Research Investigators

Ryuzo Yamamoto (Ono P'ceut.Co., Japan)

Yasuhiro Tsume

Former Visiting Graduate Students

Marc Whitehouse (Bath Univ., UK)
Ekanat Jantratid (Thailand)

Former Research Assistant

Elke Lipka (Germany)

Former Visiting Scholars

Peter Langguth (Univ. Mainz, Germany)
Narushi Takamatsu (Yamanouchi, Japan)

Former Research Fellows

Doron Friedman (Hebrew Univ, Jerusalem)
Chung Lui
Hiroaki Yuasa (Nagoya City Univ, Japan)

Former Visiting Scholars

Masahiro Murakami (Kyoto P'ceut. Univ.
Japan)

UM - Past Member of Dissertation Committee

Zhense Hu
David Lechuga-Ballesteros
Alan Kugler
Vanaja Mummaneni
Linda Lieb
You-Yin Fun
Cecily Lalor
Nancy Janiczek
Susan Niemic
Shanaz Tata
Pablo Davila-Zavala
Cheryl Stevenson
Beth Szkudlarek

Kiyoyuki Sakon (Teijin Co., Japan)
Hideto Sasaki (Takeda P'ceut.Co., Japan)
Constance Hilgendorf (Martin Luther Univ, Germany)
Shigeki Tamura (Fujisawa Co., Japan)
Gershon Golomb (Hebrew Univ., Jerusalem)
Eli Brewer (Hebrew Univ., Jerusalem)
Junichi Jinno (Otsuka P'ceut. Co., Japan)
Nehal Kasim (Univ.Alexandria, Eqypt)
Anneli Ullrich (Germany)
Henrik Scholten (Germany)
Jae Seung Kim (Korea) (TSRL,Inc. MI)
Ok-Nam Kim (Deceased)
Elke Walter (ETH-Zurich)
Katzutaka Higaki (Okayame Univ., Japan)
Masaru Imamizu (Kyorin P'ceut.Co., Japan)
Raimar Lobenberger (Germany)
Naji Najib (Jordan Univ)
Majella Lane (Trinity College, Ireland)
Yoichiro Shima (Ajinomoto P'ceut.Co. Japan)
Toshihide Takagi (Dainippon Phrm.Co., Japan)

Former Visiting Research Investigators

Thomas P. Johnson (co-advised)
Amnon Sintov (co-advised)
P. Subramanian (co-advised)
Hae-Young Ahn (co-advised)

PhD

1992
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Andrea Lauer	1996
Han-yi Kuan	1997
Nusara Piyapolrungrroj	1998
Nancy Jezyk	1998
Yuji (Simon) Zhou	1998
Roger Adami	1999
Bee Ah Cho	2001
Ying (Lillian) Li	2001
Beverly Langevin	2002
Nathan Teuscher	2002
Elizabeth Matthews	2002
Pen-Chung Chen	2003
Barbara Spong	2004
Scott Ocheltree	2005
Guangbing Ding	2005
Beata Chertok	2005
Theresa Nguyen	2006
Pe-hua (Patty) Yang	2007
Jenny Sheng	2007
John Chung	2007
Zheng Lu	2007
Susie Zhang	2008
Adivaraha Jayasankar	2008
Sarah Jean Bethune	2008
Dilara Jappar	2009
Katherine Ma	2009
Jonathan Miller	2009
Jing Sun	2010
Chasity Andrews	2010
David Good	2010
Hee Sun Chung	2010
Nan Zheng	2011
Cara Nelson	2011
Emily Rabinsky	2011
Juhee Lee	2012

The University of Michigan – Chairman PhD Thesis Committee

1986

Kevin C. Johnson - The design of amino acid prodrugs for intestinal brush border enzymes

Danial P. McNamara -Dissolution of acidic and basic compounds from the rotating disk: influence of diffusion, convection, and reaction

Barbra Stewart - Improving the intestinal absorption of water-insoluble compounds and the specificity of targeted drug delivery

Elizabeth Murphy Topp - A physiological flow model for the gastrointestinal absorption and plasma kinetics of aspirin

1987

Jim Kou - Release of water soluble drugs from dynamically swelling poly (2-hydroxyethyl methacrylate-CO-methacrylic acid) hydrogels

1988

Ming Hu - Investigation into drug and drug analogs transported by the peptide carrier system: intestinal absorption of captopril and of peptidyl derivatives of methyl dopa

Rebecca Oberle - The influence of the interdigestive migrating myoelectric complex on the gastric emptying of liquids and oral absorption of cimetidine

Patrick J. Sinko - Predicting oral drug absorption in man for compounds absorbed by carrier-mediated and passive absorption processes

1989

Hoo-Kyun Choi - Enhanced transdermal delivery of propranolol, hydrocortisone, acyclovir and peptide-type drugs (co-advised)

Maureen Donovan - The molecular weight dependence of the absorption of polyethylene glycols in the nasal and gastrointestinal mucosa and its correlation to size dependent diffusion (co-advised)

Christopher Sinko - An investigation into the relaxation behavior of pharmaceutical film coatings

1990

Tzyy-Show Chen - Investigation into fasted state gastric emptying variation and cimetidine absorption

Pei-fan Jane Bai - Peptide prodrug strategy for increasing oral bioavailability

Paul Luner - The mode of action of bile sequestrants in the GI tract: *in vitro* binding studies and modeling of *in vivo* performance

1990 (cont)

Steven Rose - The effect of input rate on the plasma disposition of propranolol enantiomers in the dog

1991

Jian-Hwa Guo - Investigating the properties of polymers for pharmaceutical controlled release applications

Kathleen Lee - The role of time dependent gastrointestinal parameters in the oral absorption of drugs

DooMan Oh - Estimating oral drug absorption in humans

Hsiao-hwa Lu (co-advised) - The influence of water transport on drug absorption in the small intestine

1992

Shiyin Yee - Oral absorption of ACE inhibitors

Steven Schwendeman (co-advised) - Modulation of drug delivery by iontophoresis through polymer membranes

Christina Lippert (co-advised) - Investigations into fed-state effects on phenytoin absorption and pharmacokinetics in dogs

Mandana Asgharnejad - Investigation into intestinal transport and absorption of an amino acid, amino acid analogue and its peptidomimetic prodrug

John Crison - Estimating the dissolution and absorption of water insoluble drugs in the small intestine

Sheng-fang Su - Investigation of the intestinal metabolism and absorption of polypeptides

Danny Man-sum Yu - Use of polymeric gelling system to improve intranasal residence time effect of viscoelasticity on mucociliary transport

May 1992

Served as Opponent for the public defense of Mr. Hans Lennernas doctoral thesis, "Intestinal absorption characteristics of three model drugs", Uppsala University, Uppsala, Sweden.

1993

James Polli - Mechanistic analysis of bile acid sequestrant performance

1995

Thomas J. Cook (co-advised) - Synthesis and release characterization of polypeptides for the controlled release of drugs.

1996

Fan Zhang - Analysis of bile acid sequestrants performance through mechanistic and animal model approaches.

Julie Rhie - The pellet gastric emptying (PGE) test: development of a non-invasive method to assess gastric emptying.

1997

Xuanqiang (Lawrence) Yu – A biopharmaceutics design model for oral delivery: predicting intestinal drug absorption.

Manisha Desai (co-advised) – Biodegradable microparticles and nanoparticles in oral vaccine delivery: investigation of critical determinants.

Ching-Ling Cheng (co-advised) – Absorption and disposition of poorly water soluble weak bases: application to delavirdine.

Nasir Idekaidek – Investigations in oral absorption of enalapril maleate

Maria Croyle – Biological and pharmaceutical aspects of adenovirus-mediated gene delivery to the intestinal epithelium.

1998

Hyo-kyung Han – A new discovery of improved oral drug absorption targeting the hPEPT1 transporter.

Yu-Yuan Chu – *In vitro*, *in situ*, and *in vivo* transport phenomena of cyclosporin A (CsA): its implication for oral absorption prediction.

Peter Markland – Modified polypeptides and polypeptide hydrogels for controlled drug delivery.

Jeffrey Sherman (co-advised) – An investigation of partitioning and permeability of pentapeptide compounds.

1999

Cheng-Pang Hsu – Over expression of human intestinal oligopeptide transporter via adenoviral transduction.

2000

Sally Choe – Analyses of time-dependent oral drug absorption.

Ngoc-Anh Nguyen – Intracellular delivery of antisense oligodeoxynucleotides utilizing starbursts polyamidoamine (PAMAM) as carriers.

2001

Lillian Li (co-advised) – Mechanisms of region-dependent absorption of a weakly basic HIV-protease inhibitor, indinavir: clinical ramifications and comparison with nelfinavir.

2002

Go Saito – Enhanced cytosolic delivery of DNA by a sulfhydryl-activatable listeriolysin O bioconjugate: implication for DNA vaccination.

Duxin Sun – Drug absorption evaluation, prodrug design and intestinal transporter expression by genechip analysis.

Michael Vieira – Dissolution into surfactant and emulsion systems: implications to the formulation of bio-relevant dissolution media for water-insoluble drugs.

2003

Tycho H. Heimbach (co-advised) – Oral phosphate prodrugs: absorption rate limit considerations.

2004

Sujatha Menon – Modeling approaches to time-dependent oral drug absorption.

Insook Kim – A novel prodrug activating enzyme, identification and characterization of BPHL.

2005

Philip L. Lorenzi – Bioevasive prodrugs: identification and evasion of nucleoside-metabolizing enzymes.

Christopher Landowski – Designing anticancer prodrugs for targeting drug transporters and activating enzymes.

Sachin Mittal – Proline prodrug of melphalan targeted to prolidase, a highly specific dipeptidase overexpressed in melanoma.

2006

Longshang Lai – Structure and function of a prodrug activating enzyme valacyclovir hydrolyase

Yasuihiro Tsume – Floxuridine prodrug development: transporter affinity and prodrug activation.

2007

Pe-hua (Patty) Yang – Targeting and selectivity of anticancer prodrug: activation by peptidase DPP IV.

2008

John Inn Chung - Gastrointestinal motility variation and oral drug absorption

2010

Ke Ma – Role, relevance and regulation of pept1 in peptide intestinal absorption

Jing Sun – Intestinal absorption of low permeability drugs: a transporter and enzyme-targeted approach

2012

Cara Hartz Nelson – Proteolytic profiling with

University of Wisconsin - Chairman - Graduate Student Thesis Committee

1978

Shabbir T. Anik - A thermodynamic analysis of the aqueous solubility and hydrophobicity of hydrocarbons using molecular surface area

1979

Pradip K. Banerjee - Design of enzymatically reconvertible prodrugs: amino acid derivatives of aspirin

Richard L. Elliott - Intestinal absorption: analysis of theoretical models

Magda Wadih Samaha - A free energy partitioning analysis of solubility and partition coefficient data

1980

Glen D. Leesman - Improving absorption of water insoluble drugs through interfacial metabolism

1982

N. Adeyinka Williams - An excess free energy approach to the estimation of solubility in mixed solvent systems

1983

David Fleisher - Intestinal absorption of hydrocortisone through prodrug reversion

1985

Donald Johnson - Intestinal transport problems involving Michaelis-Menten kinetics

PhD Graduates/Research Fellows who have held/hold academic positions

David Fleisher – 1983-2006 - University of Michigan (MI) (deceased)

Elizabeth Murphy Topp – 1986-present - University of Kansas (KS).

Ming Hu – 1990-2004 - Washington State University (WA).
2004-present – University of Houston (TX)

Patrick J. Sinko – 1991 – present - Rutgers University (NJ).

Hoo-Kyun Choi – 1995 – present - Chosun University (Korea).

Maureen Donovan – 1989 – present - University of Iowa (IA).

Paul Luner – 1995 - 2002 - University of Iowa (IA).

Steven Schwendeman (co-advised) – 1995 – 2000 – Ohio State University, OH; 2000:
2000-present – The University of Michigan (MI).

Sheng-fang Su – 1992 - 2002 - National Cheng Kung University (Taiwan).

James Polli – 1993 - present - University of Maryland (MD).

Thomas J. Cook (co-advised) – (1995) - Rutgers University (NJ).

Nasir Idakaidek – 1997 - present – Jordan University.

Maria Croyle – 2001 - present – University of Texas at Austin (TX).

Gladys Granero – 1998 – present - National University of Cordoba, Argentina

Ho-Chul Shin (DVM) – 1987 - present - Korea Res. Inst. Of Technology, Korea

Gershon Golomb -1990-present - Hebrew Univ., Jerusalem

Nehal Kasim – 1995-present - Univ. Alexandria, Egypt

Majella Lane – 1997-present - Trinity College, Ireland

Robert Pearlman –1975 - present- Univ. of Texas, TX

Peter Langguth, Johannes Gutenberg - 1998-present - Univ. of Mainz, Germany

Marival Bermejo Sanz – 1994 – present - University of Valencia, Spain

Pei-fan (Jane) Bai, 1990 - 1995- Univ. of Minnesota, MN

Kazutaka Higaki – 1996 – present – Okayama University, Okayama, Japan

Raimar Loebenberg – 2000 – present – University of Alberta, Canada

Xiaoyan (Rebecca) Chu – 1989 - 1998 - Dalian Med. University, China; Univ. of Tokyo, Japan

Elke Walter – 1995 - 2002- ETH-Zurich, Switzerland

Thomas P. Johnston – 1987 - present – University of Missouri-Kansas City, MO

Hiroaki Yuasa – 1990 - present - Nagoya City University, Japan

Ikumi Tamai –1990 - present – Kanazawa University, Tokyo College of Pharmacy, Japan

Yayoi Hayashi – 1992 - present – Nagoya City University, Japan

Shinji Yamashita – 1991 - present – Setsunan University, Japan

Ok-Nam Kim – 1992 - 1994 – Sookmyung Women’s University, Korea (deceased)

Masahiro Murakami – 1995 - 2000 – Kyoto University, Japan

Naji Najib – 1990 - present – Jordan University, Jordan

Josef Tukker – 1985 – 2001 - University of Utrecht, The Netherlands

Duxin Sun – 2003 – 2008 – Ohio State University, Columbus, OH
2008 – present – University of Michigan, College of Pharmacy

Hyo-Kyung Han –2004 – present - Chosun University, Korea