

**EXHIBIT UU-1***Revised 12/19/06***CURRICULUM VITAE****PATRICK P. DELUCA, Ph.D.**

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Email: [ppdelu1@email.uky.edu](mailto:ppdelu1@email.uky.edu)**PRESENT POSITION:**

Professor, Faculty of Pharmaceutical Sciences, University of Kentucky  
College of Pharmacy, 725 Rose Street, Suite 327H, Lexington, KY 40536-0082

**PERSONAL DATA:**

Birthdate - September 7, 1935, Scranton, PA

Wife - Judy; 6 children (Paul, Thomas, Patrick, Donald, Michelle, Michael)

**EDUCATION:**

Temple University, Philadelphia, PA

B.S. in Pharmacy - June 1957

M.S. in Pharmacy - June 1960

Thesis: "The Interaction of Quaternary Ammonium Compounds with Nonionic  
Macromolecules"

Ph.D., Pharmaceutical Sciences - January 1963

Dissertation: "Photobinding and Photoreactivity of Riboflavin in the Presence of  
Macromolecules"**PROFESSIONAL EXPERIENCE:****University of Kentucky College of Pharmacy**

1998 - 2000	Interim Chair, Faculty of Pharmaceutical Sciences
1975 - Present	Professor
1987 - 1988	Acting Director, Center for Pharmaceutical Science and Technology
1978 - 1987	Associate Dean
1972 - 1984	Division Director Pharm. Tech. Div. 1972-75, Drug Information & Technology 76-81, Drug Information, Evaluation & Technology 81-83, Clinical Practice 83-84.
1971 - 1978	Assistant Dean
1970 - 1975	Associate Professor

**Industry**

- 1969 - 1970 Cormedics Corporation, Somerville, N.J.  
Plant Manager 1969, Director Development and Control 1970. This was a joint venture between CIBA Pharmaceutical Co. and Coming Glass Co which developed and manufactured a unit dose injectable system.
- 1963 - 1969 CIBA Pharmaceutical Co., Summit, N.J.  
Senior Research Pharmacist - January 1963 to May 1966.  
Manager, Special Projects - May 1966 to Nov. 1966.  
Plant Manager, Somerville, N.J. Operations, Nov. 1966 to February 1969. (Operations later became Cormedics Corp.)
- 1957 - 1959 Analytical Chemist, Smith Kline & French Labs, Philadelphia, PA.

**Other**

- 1961 - 1962 Temple University, College of Pharmacy, Philadelphia, PA  
Laboratory Instructor (1961), Research Associate (1962).
- 1959 - 1961 Relief Pharmacist, Street Road Pharmacy, Cornwell Heights, PA.
- 1954 - 1957 Pharmacy Technician, Eppleys Pharmacy, Philadelphia, PA
- 1952 - 1954 Pharmacy Technician, Jenkins Pharmacy, Scranton, PA.

**TEACHING AND RESEARCH INTERESTS:**

Pharmaceutical Technology, Sterile Products, Intravenous Administration Systems, Controlled Drug Delivery, Target Drug Delivery, Dosage Form Development and Formulation of Proteins. (course involvement listed in ADDENDUM)

**ASSOCIATIONS:**

American Association of Pharmaceutical Scientists  
American Pharmaceutical Association  
Academy of Pharmaceutical Sciences  
American Association of Colleges of Pharmacy  
Kentucky Pharmacists Association  
Parenteral Drug Association  
American Society of Hospital Pharmacy  
New York Academy of Sciences  
Scientific Research Society of America - Sigma Xi  
Rho Chi Pharmaceutical Honor Society  
American Society for Parenteral & Enteral Nutrition  
Kentucky Academy of Sciences  
Controlled Release Society

**AWARDS RESULTING FROM RESEARCH AND SCHOLASTIC ACHIEVEMENT:**

Leo G. Penn Memorial - Temple University 1957  
Walter G. Karr Fellowship - Smith, Kline and French Laboratories 1959-1962.  
Lunsford-Richardson Pharmacy Award - "The Inactivation of Cationic Pharmaceuticals by Nonionic Surface Active Agents" 1960.  
Lunsford-Richardson Pharmacy Award - "The Effect of Binding on the Photochemical Properties of Hydrocortisone and Methylprednisolone" 1962.  
Best paper during the year 1965 toward the scientific advancement of Industrial Pharmacy. Recognized by the North Jersey Pharmaceutical Research Discussion Group.  
Co-author and faculty advisor of award winning papers submitted by graduate students to the Parenteral Drug Association for the years 1972, 1973, 1976 and 1977.  
Research Achievement Award for 1975 - Parenteral Drug Association Recognition for outstanding contribution to the literature in advancing the area of parenteral technology. (First Recipient)  
ASHP Research Award (principal author) for the most significant contribution to the literature of research in the professional practice of hospital pharmacy during 1975 for the article "Filtration and Infusion Phlebitis: A Double-blind Prospective Clinical Study".  
Stimulation of Research Awards for 1981 and 1982 from Parenteral Drug Association - "Interaction of Microspheres with Blood Constituents and Effect on Immune Response".  
Outstanding Educator in the U.S. - 1973-74.  
Listed in American Men and Women of Science, Who's Who in America, Who's Who in the South and Southwest, Who's Who in Medicine and Healthcare, Who's Who in Science and Engineering and Who's Who in American Education.  
Research Award with graduate student from Parenteral Drug Association Foundation for the Parenteral Sciences for 1986 to study the "Effects of Freezing and Drying on Immunoglobulin Conformation".  
Research Achievement Award in Pharmaceutical Technology from the American Association of Pharmaceutical Scientists (1988). (First Recipient)  
Certificate of Honor Award as a Distinguished Alumni of Temple University (1989).  
Named a Senior Fellow with the Institute for Advanced Biotechnology (1991).  
William B. Sturgill Award for outstanding contribution to graduate education and research: University of Kentucky (1995).  
Outstanding Manuscript Award in Pharmaceutical Development and Technology (1998) for publications during 1996 and 1997.  
Named a Fellow of the American Association of Indian Pharmaceutical Scientists (1998).  
Mentor of graduate student (Harmeet Chadha) receiving AAPS Graduate Student Award for Outstanding Manuscript (1998).  
Mentor of graduate student (Jay Schrier) receiving AAPS Graduate Student Award for Outstanding Manuscript (1999).  
AAPS Outstanding Educator Award in Pharmaceutical Sciences (2000). (First Recipient)  
Mentor of two graduate students (Janusz Kostanski and Sisay Gebrekidan) receiving AAPS Graduate Student Awards for Outstanding Manuscripts (2000).  
Mentor of graduate student (Bhas Dani) receiving AAPS Graduate Student Award for Outstanding Manuscript (2001).  
Sullivan Medallion Award: University of Kentucky (2001).  
Mentor of graduate student (Ge Jiang) receiving AAPS Graduate Student Award for Outstanding Manuscript (2002)  
Kentucky Pharmacist of the Year (2002).  
Outstanding Manuscript Award in Pharmaceutical Technologies for Publications in AAPS Journals (2002) for publications in 2000 and 2001.  
Mentor of graduate student (Santos Murty) receiving AAPS Graduate Student Award for Outstanding Manuscript (2003).  
Swintosky Distinguished Lecturer, University of Kentucky College of Pharmacy (2003).  
Mentor of visiting scholar (Stefano Giovagnoli) receiving AAPS Graduate Student Award for Outstanding Manuscript (2004).

Mentor of graduate student (Susan D'Souza) recipient of AAPS Graduate Student Award for Outstanding Manuscript (2005).

Honorary Doctorate from University of Perugia, Italy May 30, 2006.

AAPS Dale Wurster Research Achievement Award in Pharmaceutics (2006)

Outstanding Manuscript Award in AAPS PharmSciTech Journal (2006) for publication during 2004 & 2005

## **PUBLICATIONS:**

### **Chapters in Textbooks:**

- 1) "Kinetic Principles and Stability Testing", The Theory and Practice of Industrial Pharmacy, Lea & Febiger, Philadelphia, PA (1970) pp 669-710. Second revision (1976), Third Revision, pp 760-803, (1986).
- 2) "Sterile Products", American Pharmacy Textbook, 7th edition, Lippincott, Philadelphia, PA, pp 451-491 (1974).
- 3) "Parenteral Drug Delivery Systems" in Pharmaceutics and Pharmacy Practice, 1st ed., p. 238, Philadelphia, J.P. Lippincott (1982).
- 4) "Formulation of Small Volume Parenterals," in Pharmaceutical Dosage Forms: Parenteral Medications, Vol. 1, pp. 139-201, Marcel Dekker Inc., N.Y. (1984). Second Edition, Vol. 1, pp. 173-248, Marcel Dekker Inc., N.Y. (1992).
- 5) "Particulate Matter Monitoring" in Pharmaceutical Dosage Forms: Parenteral Medications, Vol. II, Marcel Dekker, Inc., NY, pp. 217-308, (1986).
- 6) "Particulate Matter" in Pharmaceutical Dosage Forms: Parenteral Medications, Second Edition, Vol. III Marcel Dekker, Inc., N.Y., pp. 117-230 (1993).

### **Articles in Professional Journals:**

- 1) A Description of Some Self Evaluation Programs and Case Histories, DeLuca, P., Presented at the Conference on Drug Efficacy Evaluation and Self Evaluation by Pharmaceutical Industry, October 1971. Published in the "Wisconsin Pharmacist", (1972) and FDA Handbook, "Introduction to Total Drug Quality," DHEW Publication No. (FDA) 74-3006, Nov. 1973.
- 2) Real Life Settings Make Training in Pharmacy Practical and Useful, DeLuca, P., Hopkins, H. and Smith, H., Pharmacy Times, 44-48, March (1972).
- 3) Issue Identification Approach to Pharmacy Education Planning I. Overview of Some Major Issues, Barnett, R.L., Butler, H.L., DeLuca, P.P., and Straus, R., American Journal of Pharmaceutical Education, 40:71-74, Feb. (1976).
- 4) Tomorrow's Pharmacists Today through Role Modification, Barnett, R.L., Butler, H.L., DeLuca, P.P., and Straus, R., Pharmacy Times 69968-74, Oct. (1976).
- 5) Minimizing Contamination During I.V. Therapy by In-line Filtration, DeLuca, P.P., Rapp, R.P., and Bivins, B., Western States I.V. Therapy Journal, 5-14, Sept.-Oct. (1976).

- 6) Drug Information in Pharmacy Practice, Amerson, A.B., Barnett, R.L., Butler, I.L., and DeLuca, P.P., J. Clin. Pharm., 2:219-225(1978).
- 7) Pharmaceutical Technology Clerkship, A Professional Elective Course at the University of Kentucky, Im, S., and DeLuca, P.P., Am. J. Pharm. Education, 42:52-55 (1977).
- 8) Pharm.D. in Industry, Proceedings at a special American Association of Colleges of Pharmacy Convention, Seattle, Washington, August 7, 1977. Published by Hoffman-LaRoche, Inc., 1978.
- 9) Filtration and Infusion Therapy: A Review and Forecast for the 80's. Rapp, R.P., Bivins, B. and DeLuca, P.P., Am. J. I.V. Ther. Clin. Nutr., 7:36-46 (1980).
- 10) Bridging the Gap Between the Basic Sciences and Clinical Practice: Teaching, Research and Services. The Importance of Defining Institutional Goals. Swintosky, I.V., DeLuca, P.P., Parker, P.F., and Gueryant I., Am. J. Phar. Ed., 45:109-117 (1981).
- 11) Microcontamination Control: An Approach to Training. DeLuca, P.P., J. Paren. Sci. and Tech., 37(6):218, (1983).
- 12) Controlled Release: A Clinical Guide. Pullins, Leanne and DeLuca, P.P., Merck Minutes, 3(1):1, 1986.
- 13) Let's Harmonize: Guest Editorial, DeLuca, P.P., J. Paren. Sci. and Tech., 44 (4), 183, 1990.
- 14) Educational Issues Related to the Science and Technology of Sterile Products: Academic and Industrial Perspectives. Allen Jr., L.V., Bloss, C.S., Brazeau, G.A., DeLuca, P.P., Raymond, G.G., Robinson, D.H., Stiles, L. and Thiboutot, R.P., Am. J. Pharm. Ed., 57:257-265 (1993).
- 15) Educational Issues Related to the Science and Technology of Sterile Products: Strategies for Education. Allen Jr., L.V., Bloss, C.S., Brazeau, G.A., DeLuca, P.P., Raymond, G.G., Robinson, D.H., Stiles, L. and Thiboutot, R.P., Am. J. Pharm. Ed., 57:265-268 (1993).
- 16) Regulatory and Ethical Issues of Gene-Based Drugs, DeLuca, P.P., 10<sup>th</sup> International Pharm Tech Symposium, in press, Minutes, Editions De Sante, Paris, (2001).

#### **Articles in Scientific Journals:**

- 1) A Note on an Infrared Assay of Chloroform in Pharmaceutical Products, Souder, J.C. and DeLuca, P.P., J. Am. Pharm. Assoc., Sci Ed 49, 225 (1960).
- 2) Interaction of Preservatives with Macromolecules I.V. Binding of Quaternary Ammonium Compounds by Nonionic Agents, DeLuca, P.P. and Kostenbauder, H.B., J. Am. Pharm. Assoc., Sci Ed 49, 430 (1960).
- 3) Reversible Photobinding of Riboflavin to Macromolecules in Aqueous Solution, DeLuca, P.P. and Kostenbauder, H.B., J. Phys. Chem., 67, 1395 (1963).
- 4) Enhanced Photoreactivity of Riboflavin in Aqueous Solution in the Presence of Macromolecules, DeLuca, P.P. and Kostenbauder, H.B., Nature, 199, 999 (1963).
- 5) Binding of Organic Electrolytes by a Nonionic Surface Agent, Hurwitz, A., DeLuca, P.P., Kostenbauder, H.B., J. Pharm. Sci., 52, (1963).

- 6) Lyophilization of Pharmaceutical I. Effect of Certain Physical-chemical Properties, DeLuca, P.P. and Lachman, L., J. Pharm. Sci., 54, 617 (1965).
- 7) Lyophilization of Pharmaceuticals II. High-Sensitivity Resistance Bridge for Low-Conductivity Measurements at Eutectic Temperatures, Lachman, L., DeLuca, P.P., Withnell, R., J. Pharm. Sci., 54, 1342 (1965).
- 8) Lyophilization of Pharmaceuticals III. Programming of Mathematical Expression of Estimating Eutectic Temperatures from Melting Point and Solubility Parameters, DeLuca, P.P., Lachman, L., Yost, W., J. Pharm. Sci., 54, 1348 (1965).
- 9) Lyophilization of Pharmaceuticals IV. Determination of Eutectic Temperatures of Inorganic Salts, DeLuca, P.P. and Lachman, L., J. Pharm. Sci., 54, 1411 (1965).
- 10) Lyophilization of Pharmaceuticals V. Influence of Metal Trays on Heat Transfer During Lyophilization, DeLuca, P.P. and Lachman, L., Bull. Parenter. Drug Assoc., 20, 65 (1966).
- 11) Photobinding and Photoreactivity of Riboflavin in the Presence of Macromolecules, Kostenbauder, H.B., DeLuca, P.P., Kowarski, C.R., J. Pharm. Sci., 54, 1244 (1965).
- 12) Modified Computer Programs for Determining Eutectic Temperatures, DeLuca, P.P., Lachman, L., Yost, W., Clements, I.A., Rogers, A.R., J. Pharm. Sci., 55, 450 (1966).
- 13) Manufacturing Aspects of Prefilled Disposable Syringes, DeLuca, P.P., Bull. Parenter. Drug Assoc., 23, 8 (1969).
- 14) Nylon as a Dialysis Membrane, Kostenbauder, H.B., Boxenbaum, H.G., DeLuca, P.P., J. Pharm. Sci., 58, 753 (1969).
- 15) Instrumented Pilot Plant Lyophilizer: Its Versatility in Developing and Programming Production Cycles, DeLuca, P.P., J. Pharm. Sci., 60, 744-81 (1971).
- 16) Problems Arising from the Transfer of Sodium Bicarbonate Injection from Ampuls to Plastic Syringes, DeLuca, P.P. and Kowalsky, R.I., Am. J. Hosp. Pharm., 29, 217 (1972).
- 17) In-line Final Filtration - A Method of Minimizing Contamination in Intravenous Therapy, Ryan, P.B., Rapp, R.P., DeLuca, P.P., Griffen, W.O., Clark, I.D., Cloys, D., Parenteral Drug Association Research Award winning paper for 1972, Bull. Parenter. Drug Assoc., 27, 1 (1973).
- 18) Physical-Chemical Properties of Substituted Amides in Aqueous Solutions and Evaluation of Their Potential Use as Solubilizing Agents, DeLuca, P.P., Lachman, L., Schroeder, H.G., J. Pharm. Sci., 62, 1320-27 (1973).
- 19) A Study on the In-vitro Precipitation of Poorly Soluble Drugs From Nonaqueous Vehicles in Human Plasma, Schroeder, H.G. and DeLuca, P.P., Parenteral Drug Association Research Award winning paper for 1973, Bull. Parenter. Drug Assoc., 28, 1 (1974).
- 20) Consequences of Microbial Contamination During Extended Intravenous Therapy Using In-line Filters, Rusmin, S., Althausen, M.B., DeLuca, P.P., Am. J. Hosp. Pharm., 32, 373-77 (1975).
- 21) Effect of Antibiotics and Osmotic Change on the Release of Endotoxin by Bacteria Retained on Intravenous In-line Filters, Rusmin, S. and DeLuca, P.P., Am. J. Hosp. Pharm., 32, 378-80 (1975).
- 22) In-line Filtration of I.V. Fluids and Drugs, Rapp, R.P., Bivins, B., DeLuca, P.P., Am. J. of IV Ther., 2, 18-23 (1975).

- 23) Filtration and Infusion Phlebitis: A Double-blinded Prospective Clinical Study, DeLuca, P.P., Rapp, R.P., Bivins B., McKean, H.E., Griffen W.O., Am. J. Hosp. Pharm., 32, 1001-1007 (1975).
- 24) Viscosities and Partial Molal Volumes of Some Tetramethylcarboxamides at 25°C, DeLuca, P.P. and Rebagay, T.V., J. Phys. Chem., 79, 2493-96 (1975).
- 25) Evaluation of a Prototype Air-venting In-line Intravenous Filter Set, Rapp, R.P., Bivins, B., Schroeder, H.G., DeLuca, P.P., Am. J. Hosp. Pharm., 32, 1253-59 (1975).
- 26) Membrane Filters: Additional Safety for Intraarterial Infusions, Meeker, W.R., Rapp, R.P., DeLuca, P.P., Bivins, B., Arch. Surg., 111, 201 (1976).
- 27) Effect of In-line Intravenous Filtration on the Potency of Potassium Penicillin G, Rusmin, S. and DeLuca, P.P., Bull. Parenter. Drug Assoc., 30, 64-71 (1976).
- 28) Evaluation of a 5 Micron Stainless Steel Filter as an Intravenous In-line Filter or Pre-filter, Rapp, R.P., Schroeder, H.G., DeLuca, P.P., Am. J. Hosp. Pharm., 33, 52-356, (1976).
- 29) Residues in Antibiotic Preparations I. Scanning Electron Microscopic Studies of Surface Topography, Rebagay, T., Rapp, R.P., Bivins, B., DeLuca, P.P., Am. J. Hosp. Pharm., 33, 433-43 (1976).
- 30) Residues in Antibiotic Preparations II. Effect of pH on the Nature and Level of Particulate Matter in Sodium Cephalothin Intravenous Solution, Rebagay, T. and DeLuca, P.P., Am. J. Hosp. Pharm., 33, 443-48 (1976).
- 31) Particulate Matter Assessment of a Clinical Investigation on Filtration and Infusion Phlebitis, Schroeder, H.G. and DeLuca, P.P., Am. J. Hosp. Pharm., 33, 543-46 (1976).
- 32) Compliance with USP Osmolarity Labeling Requirements, Murty, B.S.R., Kapoor, I.N., DeLuca, P.P., Am. J. Hosp. Pharm., 33, 546-51 (1976).
- 33) The Dielectric Constant and Dipole Moment of N,N,N'N' Tetramethylpimelamide at 25°C., DeLuca, P.P., Rebagay, T.V., Casteel, I., J. of Chem. & Engr. Data, 21, 262-64 (1976).
- 34) Correlation of Dielectric Constant and Solubilizing Properties of Tetramethyldicarboxamides, Rebagay, T. and DeLuca, P.P., J. Pharm. Sci., 65(11), 1645-48 (1976).
- 35) Microbial Assessment of a Clinical Investigation on Filtration and Infusion Phelebitis, Rusmin, S., DeLuca, P.P., Rapp, R., Bivins, B., 1976 Parenteral Drug Association Research Award, Bull. Parenter. Drug Assoc., 31(1), 1-8 (1977).
- 36) Freeze Drying of Pharmaceuticals, DeLuca, P.P., J. Vac. Sci. & Technol., 14, 620-29 (1977).
- 37) Particulate Matter Monitoring I. Evaluation of Some Membrane Filters and Microscopic Techniques, Rebagay, R.V., Schroeder, H.G., Sophann, I.M., DeLuca, P.P., Bull. Parenter. Drug Assoc., 31(2), 57-69 (1977).
- 38) Particulate Matter Monitoring II. Correlation of Microscopic and Automatic Counting Methods, Rebagay, T.V., Schroeder, H.G., DeLuca, P.P., Bull Parenter Drug Assoc., 31(3), 150-55 (1977).
- 39) Inflammatory Potential of Foreign Particulates in Parenteral Drugs, Dorris, G. C., Bivins, B.A., Rapp, R.P., Weiss, D.L., DeLuca, P.P., Ravin, M.B., Anesth. Analg., 56(3), 422-28 (1977).

- 40) Effect of In-line Filtration on the Potency of Drugs Administered Intravenously, Rusmin, S., Welton, S., DeLuca, P., DeLuca, P.P., Am. J. Hosp. Pharm., 34, 1071-74 (1977).
- 41) Research and Development of Pharmaceutical Dosage Forms, International Symposium on Freeze-drying of Biological Products, Washington, DC, 1976, DeLuca, P.P., Develop. Biol. Standard, 36, 41-50 (1977).
- 42) Improved Microscopic Methods and Correlation with Automatic Methods, Part 4 of a panel presentation on Particulate Contamination Monitoring, DeLuca, P.P., Bull. Parenter. Drug Assoc., 31(4), 173-78 (1977).
- 43) The Detection of Ampul Leakers Using Short-lived Radioisotope, Butler, L.D., Coupal, I.I., DeLuca, P.P., 1977 Parenteral Drug Association Research Award, Bull. Parenter Drug Assoc., 32(1), 2-9 (1978).
- 44) Sustained-Release From Inert Wax Matrixes I: Drug-Wax Combinations, Schroeder, H.G., Dakkuri, A., DeLuca, P.P., J. Pharm. Sci., 67(3), 350-53 (1978).
- 45) Sustained Release from Inert Wax Matrixes II: Effect of Surfactants on Tripelellamine Hydrochloride Release, Dakkuri, A., Schroeder, H.G., DeLuca, P.P., J. Pharm. Sci., 67(3), 354-57 (1978).
- 46) Sustained Release from Inert Wax Matrices III: Effect of Povidone on Tripelellamine Hydrochloride Release, Dakkuri, A., Butler, L.D., DeLuca, P.P., J. Pharm. Sci., 67(3), 357-360 (1978).
- 47) Distribution of Radiolabeled Subvisible Microspheres after Intravenous Administration to Beagle Dogs, Schroeder, H.G., Simmons, G.H., DeLuca, P.P., J. Pharm. Sci., 67 (4), 504-07 (1978).
- 48) Physiological Effects of Subvisible Microspheres Administered Intravenously to Beagle Dogs, Schroeder, H.G., Bivins, B.A., Sherman, G.P., DeLuca, P.P., J. Pharm. Sci., 67(4), 508-13 (1978).
- 49) A Note on the Acute Toxicity of Substituted Amide Solvents, Sherman, G.P., Gatlin, L., DeLuca, P.P., Drug Dev. Ind. Pharm., 4(5), 485-89 (1978).
- 50) Final In-line Filtration: A Means of Decreasing the Incidence of Infusion Phlebitis, Bivins, B.A., Rapp, R.P., DeLuca, P.P., McKean, H., Griffen, W.O., Surgery, 85(4), 388-94 (1979).
- 51) Conditions Permitting Air Flow Through an Air-venting In-line Filter, Rusmin, S., Rapp, R.P., Bivins, B.A., DeLuca, P.P., Am. J. Hosp. Pharm., 36, 749-53 (1979).
- 52) Colorimetric Determination of Penicillins and Related Compounds in I.V. Solutions by Nickel (II) - Catalyzed Hydroxamic Acid Formulation Munson, I., Papadimitriou, D., DeLuca, P.P., J. Pharm. Sci., 68(10), 1333-35 (1979).
- 53) Determining Osmolarities: A Practical Approach for Multicomponent Intravenous and Parenteral Nutrient Solutions, Gatlin, L., Kulkarni, P., Hussain, A., DeLuca, P.P., Am. J. Hosp. Pharm., 36, 1357-61 (1979).
- 54) Sepsis in Rabbits Following Administration of Contaminated Infusions Through Filters of Venous Pore Size, Rapp, R.P., Bivins, B.A., DeLuca, P.P., Am. J. Hosp. Pharm., 36, 1711 (1979).
- 55) Identification of Subvisible Barium Sulfate Crystals in Parenteral Solutions, Bodappati, S., Butler, L.D., Im, S., DeLuca, P.P., J. Pharm. Sci., 69(5), 608-10 (1980).
- 56) Theoretical Aspects of Particulate Matter Monitoring by Microscopic and Instrumental Methods, Schroeder, H.G., and DeLuca, P.P., J. Parenter Drug Assoc., 34(3), 183-91 (1980).



- 57) Improving Drug Distribution in Solid Oral Dosage Forms Through Application of the Freeze Drying Process, DeLuca, P.P., Machado, H., Schroeder, H.G., APGI Proceedings 2nd International Conference on Pharmaceutical Technology Vol. 1, 45, France, June (1980).
- 58) The Fate and Effects of <sup>141</sup>Ce Labeled Microspheres Following I.V. or I.A. Administration in Beagle Dogs, DeLuca, P.P., Kanke, M., Bivins, B., Slack, J., Simmons, G., Yokel, R., Schroeder, H., Sniecinski, I., APGI Proceedings 2nd International Conference on Pharmaceutical Technology Vol. II, 27, France, June (1980).
- 59) Crystallization and Crystalline Kinetics of Frozen Antibiotic Solutions, Gatlin, L., and DeLuca, P.P., APGI Proceedings 2nd International Conference on Pharmaceutical Technology Vol II, 140, France, June (1980).
- 60) The In-line Filter: A Means of Reducing the Complications of Intravenous Therapy, DeLuca, P.P., Rapp, R.P., Bivins, B.A., APGI Proceedings, 2nd International Conference on Pharmaceutical Technology Vol IV, 181, France, June (1980).
- 61) Theoretical Aspects of Sterile Filtration and Integrity Testing, Schroeder, H.G. and DeLuca, P.P., APGI Proceedings 2nd International Conference on Pharmaceutical Technology Vol IV, 191, France, June (1980).
- 62) The Identification of Particulates in Parenteral Products, DeLuca, P.P., Im, S., Boddapati, S., APGI Proceedings 2nd International Conference on Pharmaceutical Technology Vol IV, 199, France, June (1980).
- 63) Clearance of Ce-141 Labeled Microspheres from the Blood and Distribution in Specific Organs Following Intravenous and Intraarterial Administration in Beagle Dogs, Kanke, M., Simmons, G.H., Weiss, D.L., Bivins, B.A., DeLuca, P.P., J. Pharm. Sci., 69(7), 755 July (1980).
- 64) Effect of In-line Filtration on the Potency of Low Dose Drugs, Butler, L.D., Munson, I.M., DeLuca, P.P., Am. J. Hosp. Pharm., 37, 935 (1980).
- 65) Guidelines for the Identification of Particles in Parenterals, DeLuca, P.P., Boddapati, S., Im, S., FDA Bylines, 10, 111-165 (1980).
- 66) A Study of Phase Transitions in Frozen Antibiotic Solutions by Differential Scanning Calorimetry, Gatlin, L. and DeLuca, P.P., J. Parenter. Drug Assoc., 34(5), 398-408, (1980).
- 67) Theoretical Aspects of Sterile Filtration and Integrity Testing, Schroeder, H.G. and DeLuca, P.P., Pharm. Tech., 4(11), 80 (1980).
- 68) Compatibility of Amphotericin B with Certain Large-volume Parenterals, Jurgens, R.W., DeLuca, P.P., Papadimitriou, P., Am. J. Hosp. Pharm., 38, 377-78 (1981).
- 69) Acute Hemodynamic Effects and Blood Pool Kinetics of Polystyrene Microspheres Following I.V. Administration, Slack, I.D., Kanke, M., Simmons, G.H., DeLuca, P.P., J. Pharm. Sci., 70(6), 660-64 (1981).
- 70) Acute Toxicity of Latex Microspheres, Yokel, R., Simmons, G.H., Sabo, I., DeLuca, P.P., Toxicol. Lett., 9, 165-170 (1981).
- 71) The Application of Proposed Procedures for Testing for Extractables in Plastic Containers, DeLuca, P.P., Papadimitriou, D., DeLuca, P.P., J. Parenter. Sci. Technol., 36(1), 28 (1982).

- 72) Biodegradable Microspheres for Controlled Drug Delivery Via the Parenteral Route, DeLuca, P.P., Sato, T., Schroeder, H.G., Kanke, M., APGI Proceedings 3rd International Conference on Pharmaceutical Technology, Vol IV, p. 152-161, France, (1983).
- 73) Interaction of Microspheres with Blood Constituents and Effect on Immune Response, Kanke, M., Sniecinski, I., DeLuca, P.P., APGI Proceedings 3rd International Conference on Pharmaceutical Technology, Vol IV, p. 162-169, France (1983).
- 74) Binding of Select Drugs to Cellulosic Ester Membranes During I.V. Administration and Continuous Ambulatory Peritoneal Dialysis, Kanke, M., Eubanks, I., DeLuca, P.P., APGI Proceedings of 3rd International Conference on Pharmaceutical Technology Vol III, 308-317, France (1983).
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3. U.S. Patent 4,741,872; May 3, 1988, European #0245820A2, Australian #600723, Canadian #1,309,657; November 3, 1992, Preparation of Biodegradable Microspheres as a Carrier for Macromolecules (with Frantisek Rypacek).
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**ADDENDUM****A. *Administrative Experience***

## 1. Academia:

## 1.1 Principle administrative responsibilities of Associate Dean and Division Director:

- (a) Prepared fiscal and biennium budgets for the College and Divisions within the College.
- (b) Oversight of institutional grant requests.
- (c) Prepared the 5-year plan (alternate years).
- (d) Evaluated and recommended space allocations, renovations and utilization.
- (e) Modified and improved systems, procedures and services
- (f) As a Division Director, assessed the needs of the division and prepared budget developed good morale and good standards of performance among division personnel and evaluated division personnel on a regular basis and attempted to promote.
- (g) Served on special assignments from the Chancellor for the Medical Center.
- (h) Coordinated planning for clinical aspects of pharmacy in the Medical Center.
- (i) Coordinated planning and occupancy of new College of Pharmacy Building.
- (j) Served as an Interim Director of Center for Pharmaceutical Science and Technology.
- (k) Co chaired committee for Reorganization of Pharmaceutical Sciences Faculty.
- (l) Served as Interim Chair of Pharmaceutical Sciences Faculty.

## 1.2 Research Program:

- (a) Direct research staff of post-doctoral fellows, graduate students and research technicians.
- (b) Manage annual budget of ~ \$500,000 and 3-5 funded projects.

## 2. Industry:

At CIBA as a Senior Research Pharmacist was in charge of Stability Evaluation Programs. Also was liaison with the Animal Health Group. As manager of Special Projects was responsible for locating a plant site and establishing the manufacturing operation for Prefilled Disposable Syringe System. As plant manager had responsibility for a 100 people operation.

**B. *Instructional Experience***

## 1. University of Kentucky:

- (a) Developed three courses:  
1972 - introduced a 4 credit course in Industrial Pharmaceutical Technology;  
1973 - introduced a 3 credit course in Sterile Parenterals and Devices;  
1974 -as a result of a VA sponsored grant, a 3 credit Pharmaceutical Technology Clerkship course was introduced (changed to 4 credits in 1977; in 1979, essential elements were introduced into core curriculum).
- (b) Has had major responsibility and shared lectures for Pharmaceutics courses, had shared course responsibility in Pharmaceutical Analysis and Physical Pharmacy and has given lectures in Pharmacotherapeutics, Pharmacy and the Health Care System, and Drugs, Medicines and Society courses.

2. Off-Campus Teaching
  - (a) Frequent invited speaker at national and international professional and scientific meetings. In the past 35 years personally delivered over 250 seminars (Listing available on request)
  - (b) Developed and directed two intensive short courses; one in sterile products technology and the other in particulate matter monitoring which are presented yearly in New Jersey by the Center for Professional Advancement. (Also presented in Europe, Puerto Rico and to the FDA).

**C. Professional and Public Service**

1. University Committee Activities (C Current)

- Chairman of an ad hoc University Task Group on University Goals
- University Senate (3 terms) (c)
- General Studies Committee
- Ad hoc committee on Tobacco and Health Research Institute Policy
- Criteria for Promotion and Tenure
- University Academic Area Advisory Committee for the Clinical Sciences (2 terms, was chairman for one year)
- University Academic Area Advisory Committee for the Biological Sciences for 4 terms; Chairman, 1988-89; Chairman 2002-2005.
- Tobacco & Health Institute Policy
- Search Committee for Director of Tobacco and Health Research Institute
- Chairman of Search Committee for Academic Ombudsman
- University Self Study (Physical Resources)
- University Major Research Equipment Committee
- University Research Committee
- Medical Center Space Survey
- Medical Center Facilities Advisory Committee
- Health Care Delivery Planning Task Force
- Steering Committee for Medical Center Planning
- Academic Performance, College of Allied Health
- New College of Pharmacy Fund Raising Committee
- 25th Anniversary of Medical Center Planning Committee
- Center of Excellence Task Force for Pharmaceutical Science & Technology
- Self Study Research Task Group for the College of Medicine
- Task force on Equipment Maintenance
- Advanced Science and Technology Commercialization Center
- Senate Advisory Hearing Committee
- Senate Advisory Faculty Code Committee
- University Intellectual Properties Committee
- Biomedical Engineering Review
- Examining Committee for several non Pharmacy Candidates for the degree of Doctor of Philosophy
- University Senate Rules Committee (c)
- University Self Learning Initiatives Committee (c)

2. College Committee Activities

- Tripartite Committee
- Administrative Council
- Graduate Program
- Seminar Committee
- Ad Hoc Committee on Departmental Reorganization
- Building, Space and Services
- Appointment, Promotion and Tenure, Chairman
- Health and Drug Education
- Honors Day
- Manpower Study (Chairman)
- Self Study Task Group
- New Building Planning Committee (Chairman)
- Pharm.D. Council
- Curriculum
- Dedication of New Building Planning Committee
- SAKPHA Advisor (1980-81)
- Admissions
- Deans and Division Directors
- Pharm.D. Curriculum Task Force
- Chairperson, Search Committee for Medicinal Chemistry & Pharmaceutics

Division Chair

- AAPS Student Chapter Advisor
- First Year Course Coordinator for New Curriculum
- Reorganization Task Group Co-Chair
- College of Pharmacy Outreach Committee

3. Other Professional Service

- (a) Involvement on State Level: Served on an ad hoc study group on pharmacy, appointed by the Council on Public Higher Education, to assist in the development of a comprehensive health sciences education plan for the Commonwealth of Kentucky. Served on a Kentucky Department of Health, Education and Welfare Laetril Committee. Has been a delegate at the Kentucky Pharmacists Association House of Delegates Meetings.
- (b) Professional Involvement on a National Level: Served as President of the Academy of Pharmaceutical Sciences in 1979-80; Executive Committee member of the Academy for 6 years, 1974-77, 1979-81; an Academy fellow; served on and chaired numerous Academy committees. Charter Member of the American Association of Pharmaceutical Scientists. Member and Chairman (1987) of Board of Director of AAPS. Member of the AAPS Pharmaceutical Technologies Section Executive Committee. Currently, serving as an elected member at large on the AAPS Executive Committee.
- (c) American Society of Hospital Pharmacists Foundation: Served on Research Awards Committee, 1984 - 1986.
- (d) American Council on Pharmaceutical Education: Served as a member on accreditation teams.
- (e) Served on a national group commissioned by the Department of Education to recommend a mechanism to establish a National Commission on Excellence in

Science and Math Education.

- (f) Delegate to the U.S.P. Has served on various committees and advisory panels of the U.S.P. Also served on a FDA-USP national coordinating committee to study the problems involved with large volume parenteral solutions.
- (g) National Cancer Institute: Member of Special Task Force to Review Program and Future Direction of the Pharmaceutical Resources Branch.
- (h) Editor-in-Chief for International Journal, *Pharmaceutical Development and Technology*, 1995 – 1999.
- (i) Member of Editorial or Scientific Advisory Board of *Pharmaceutical Technology*, *Journal of Pharmaceutical Sciences and Technology*, *STP Technology Pharm. Sciences and Microspheres*, *Microcapsules and Liposomes*.
- (j) Editor-in-chief for AAPS online journal PharmSciTech. 2000-
- (k) Served on NIH, NIDA & SBIR Review Groups, and the FDA Pharmaceutical Sciences Advisory Committee

4. Public Service

- (a) Served on and chaired parish councils at Newman Center and Christ the King Cathedral
- (b) Co-Founder of Faith Pharmacy, a Faith-based initiative that provides prescription medications to the indigent population of Central Kentucky. Currently serves as Chair of the Board of Advisors.
- (c) Served on State Task Force Group to select U.S. Magistrate Judges for 2 districts in Kentucky



**D. Research and Scholarship**

Research has been directed toward the advancement of pharmaceutical technology in industry and the clinical setting. Has engaged in collaborative, interdisciplinary research associated with the preparation, administration and control of intravenously administered fluids. Current major interests are in developing and evaluating micro-particulate systems to target drugs and agents to specific organs and cells via parenteral and inhalation administration, formulation development of protein molecules and optimization of the freeze-drying process. Research activities have included: (a) assessing the clinical hazards of particulate contamination; (b) determining where particles localize in the body; (c) identifying residues isolated from various injectable preparations and establishing guidelines for identification; (d) evaluating potential solubilizing agents for poorly soluble drugs; (e) studying factors which influence the release of drugs from sustained action dosage forms; and (f) freeze-drying.

Research achievements were recognized on numerous occasions. In 1960 and 62 as the recipient of the Lunsford-Richardson Pharmacy Award and in 1965 as the recipient of a research award for the best paper contributing to the advancement of industrial pharmacy. Graduate students have received the Parenteral Drug Association Research Award four times for research reports of work on intravenous dosage forms (1972-1977). Received the first annual Research Achievement Award sponsored by the Parenteral Drug Association, contributing to the literature over a 5 year period in advancing the area of parenteral technology. Recipient of the ASHP Research Achievement Award for the most significant research contribution to the professional practice of hospital pharmacy during 1975. Recipient of the Parenteral Drug Association Foundation for the Pharmaceutical Sciences Stimulation of Research Awards for 1981 and 82. Co-recipient with his graduate student of a research award for studying the effects of freezing and drying on Immunoglobulin Conformation in 1987. Received the first Research Achievement Award in Pharmaceutical Technology from the AAPS in 1988. Recipient of the William B. Sturgill Award for outstanding contribution to graduate education and research at the University of Kentucky in 1995. In 1998, was the recipient of the Outstanding Manuscript Award in *Pharmaceutical Development and Technology* during the period 1996-1997. In 2000, was the recipient of the first AAPS Outstanding Educator Award in Pharmaceutical Sciences Education. In 2001, he was honored by the University as a Sullivan Medalist. Seven of his students have received AAPS Graduate Student Awards for Outstanding Manuscripts from 1998 - 2003. He is the 2002 recipient of the Outstanding Manuscript Award for papers published in *PharmSciTech* and *Pharmaceutical Development and Technology* during 2000 and 2001. He was named Kentucky Pharmacist of the Year in 2002 and he was the 2003 Swintosky Distinguished Lecturer at the College of Pharmacy. In 2006, he received an Honorary Doctorate from the University of Perugia in Italy and was the recipient of the AAPS Dale Wurster Research Achievement Award in Pharmaceutics and the recipient of the Outstanding Manuscript Award in AAPS PharmSciTech.

Since joining the University of Kentucky College of Pharmacy in 1970, published or has in press over 200 scientific and professional papers, authored 6 chapters in textbooks and received several patents. Also during this period has served on over 75 graduate and Pharm.D. student advisory committees, the chairperson for 30; directed 42 postdoctoral scholars and coordinated the efforts of 7 adjunct faculty and several visiting professors. Served on NIDA and SBIR Review Committees since 1989. In 1994, he was named co-editor of *STP Pharma Sciences* for North America, in 1995 became the Editor-in-Chief of *Pharmaceutical Development and Technology* and 1999 the Editor-in-Chief of AAPS *PharmSciTech*..

***E. Funding Through July 2006***

While at Kentucky, has received over \$8,500,000 in funds and equipment in support of research and innovative programs. This includes Federal funding for The Development of a Novel Delivery System for Treating Osteopenia, the Development of Guidelines for the Identification of Particulate Contamination in Parenteral Products, an Investigation on the Distribution of Microspheres following I.V. Injection, a Double-Blind Study to Evaluate the Function of an In-Line Filter during I.V. Fluid Administration, the Formulation of Monoclonal Antibodies in the Treatment of Kidney Graft Rejection, the Development and Implementation of a Pharmaceutical Technology Clerkship program with the VA Hospital and the Development of a Sustained Antiplatelet Antimicrobial Delivery System. Industry funding includes the Formulation of Peptide and Protein Products for Clinical Investigation, Optimization of Freeze-Drying Cycles and Alternative Freeze-Drying Approaches, a Drug Additive Compatibility Investigation with Plastic Container, Lung-Targeted Drug Delivery Using Biodegradable Microspheres and Development of Peptide Delivery Systems Using Biodegradable Microspheres. The other funds from Industry and Foundation sources were in support of research on intravenous fluid administration systems, in-line filters, targeted drug delivery, freeze drying, and various pharmaceutical technology projects.

**Patrick P. DeLuca, Ph.D.**  
**Professor of Pharmacy and Sullivan Medalist**  
**University of Kentucky College of Pharmacy**  
**Short Bio**

Patrick P. DeLuca received his B.S. in 1957 from Temple University, spent 2 years at Smith, Kline and French Labs as an Analytical Chemist, received his M.S. in 1960 and his Ph.D. in 1963 from Temple University. In 1963, he joined the CIBA Pharmaceutical Company as a Senior Research Pharmacist. In 1967 he was named the Plant Manager for CIBA- Somerville Operations and in 1969 became Director of Development and Control until July 1970 when he joined the University of Kentucky and currently is Professor in the Pharmaceutical Sciences Department.

Dr. DeLuca's major teaching and research responsibilities and interests are in the area of Pharmaceutical Technology. He has published over 200 research articles on lyophilization, photochemistry, stability testing, complexation, I.V. therapy, microsphere drug delivery, and particulate matter monitoring and has several professional publications on pharmacy education. He is the author of chapters on "Sterile Products", "Kinetic Principles and Stability Testing", "Parenteral Drug Delivery Systems", "Formulation of Small Volume Parenterals", and "Particulate Matter".

In 1960 and 62 he was the recipient of the Lunsford-Richardson Pharmacy Awards for his M.Sc. and Ph.D. research and in 1965 his paper published in *J Pharm Sci* was selected as the best paper contributing to the advancement of industrial pharmacy. In 1975, he received the first annual Research Achievement Award sponsored by the Parenteral Drug Association, contributing to the literature over a 5 year period in advancing the area of parenteral technology and the ASHP Research Achievement Award for the most significant research contribution to the professional practice of hospital pharmacy. He was the recipient of the Parenteral Drug Association Foundation for the Pharmaceutical Sciences Stimulation of Research Awards for 1981 and 82 and co-recipient with his graduate student of a research award for studying the effects of freezing and drying on Immunoglobulin Conformation in 1987. He received the first Research Achievement Award in Pharmaceutical Technology from the AAPS in 1988 and was the recipient of the William B. Sturgill Award for outstanding contributions to graduate education and research at the University of Kentucky in 1995. In 1998, he was the recipient of the Outstanding Manuscript Award in *Pharmaceutical Development and Technology* during the 2-year period 1996-1997. In 2000, was the recipient of the first AAPS Outstanding Educator Award in Pharmaceutical Sciences Education. In 2001, he was honored by the University as a Sullivan Medalist for his humanitarian efforts, and in 2002 was the recipient of the Outstanding Manuscript Award for papers published in *PharmSciTech* and *Pharmaceutical Development and Technology* during 2000 and 2001. Graduate students have received the Parenteral Drug Association Research Award five times for research reports of work on intravenous dosage forms (1972-1977). Eight of his students have received AAPS Graduate Student Awards for Outstanding Manuscripts from 1998 - 2005. He was named Kentucky Pharmacist of the Year in 2002 and the Swintosky Distinguished Lecturer at the University of Kentucky College of Pharmacy in 2003. He was chosen as a Distinguished Alumnus of Temple University in 1989 but most noteworthy is his selection for an Honorary Doctorate at the University of Perugia in Italy which will be granted in May 2006. In October 2006, he will receive the AAPS Dale Wurster Research Achievement Award in Pharmaceutics as well as being a recipient of the Outstanding Manuscript to be published in AAPS PharmSciTech from papers published during 2004 & 2005.

Dr. DeLuca served as President of the American Pharmaceutical Association's Academy of Pharmaceutical Sciences in 1979, and is a Fellow of the Academy. He is a founding member and Fellow of the American Association of Pharmaceutical Scientists and a current member of the Executive Council. He has served as a member of the F.D.A.-U.S.P. sponsored National Coordinating Committee to study the problems involved with large volume parenteral solutions. He is a member of the Parenteral Drug Association, the New York Academy of Sciences, the American Association of Colleges of Pharmacy and the American Society of Hospital Pharmacists. Dr. DeLuca was Editor-in-Chief of the international journal, *Pharmaceutical Development and Technology* 1995-1999 and is now the Editor-in-Chief of AAPS online journal *PharmSciTech*. He serves on the editorial board of several scientific journals and is a consultant to the F.D.A. and the pharmaceutical industry.