

## CURRICULUM VITAE

### **PATRICK W. BANKSTON, Ph.D.**

Assistant Dean and Director of the Northwest Center for Medical Education

Statewide Competency Director

Professor of Anatomy and Cell Biology

Professor of Pathology and Laboratory Medicine

Indiana University School of Medicine

Northwest Center for Medical Education

3400 Broadway

Gary, IN 46408

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### EDUCATION

B.A. Degree in Biology (June 1968)

Hobart College, Geneva, NY

Ph.D. Degree (December 1973)

University of Chicago

Department of Anatomy

Chicago, IL

## **POSITIONS AND EXPERIENCE**

1968-1973	United States Public Health Service Trainee, University of Chicago, Dept. Anatomy
1969-1971	Graduate Teaching Assistant in Histology, University of Chicago, Dept. Anatomy
1971-1973	Graduate Teaching Assistant in Gross Anatomy, University of Chicago, Dept. Anatomy
1973-1978	Assistant Professor of Anatomy, Hahnemann University, Philadelphia, PA (Appointment as Graduate Faculty Member, 1974)
1979-1982	Assistant Professor of Anatomy, Indiana University School of Medicine, Northwest Center
1982	Appointment as Graduate Faculty Member
1986	Joint Appointment in the Department of Pathology
1989	Sabbatical Leave with Nobel Laureate, Dr. George Palade, Yale Univ. Dept. Cell Biology
1982-1991	Associate Professor of Anatomy and Pathology, Indiana University School of Medicine,
1991-present	Professor of Anatomy and Cell Biology, Professor of Pathology and Laboratory Medicine, Indiana University School of Medicine, Northwest Center for Medical Education
1995-present	Curriculum Coordinator, Regional Center Alternative Pathway
1998-present	Statewide Problem Solving Competency Director
1998-present	Center Competency Coordinator
2003-4	Associate Director of the Northwest Center
2004	Interim Director of the Northwest Center
2005-present	Assistant Dean

## **PROFESSIONAL SOCIETIES (Past and Present)**

Electron Microscopy Society of America, American Society for Cell Biology, American Association of Anatomists, Sigma XI, International Association of Medical Science, Educators, American Association of Medical Colleges (Central Group for Educational Affairs)

## **EDITORIAL BOARDS AND REVIEWER**

American Journal of Anatomy (Editorial Board), Scanning Electron Microscopy (Editorial Board), J. Histochem. Cytochem., Microvascular Research

## **TEACHING EXPERIENCE**

### **I. Medical School Teaching**

Thirty years teaching in Histology, Cell Biology, Neurosciences, Gross Anatomy, Senior Electives in Electron Microscopy for Pathologists, PBL Case Writing at Hahnemann University and Indiana University

### **II. Graduate School Teaching:**

Thesis Advisor to one Masters and three Ph.D. Students.

Member of thesis and advisory committees for more than 20 Ph.D., Masters and Psy.D. Students at Hahnemann University and Indiana University

### **III. Undergraduate and College of Allied Health Professions Teaching**

Anatomy and Physiology for Nursing and Allied Health students at Hahnemann University

## **TEACHING AWARD**

Trustees Excellence in Teaching Award from Indiana University - 2003

## **ADMINISTRATIVE ACTIVITIES, COMMITTEES, SERVICES**

### **Medical School And Departmental Service Activities**

Every departmental and center standing committee, numerous faculty search committees. School committees include: Admissions Interviewer (Hahnemann), Education and Curriculum Committee (previous med school education committee), Graduate Council (Hahnemann), Academic Standards Committee, Student Promotions, Medical School Steering Committee, Primary Care Initiative, Statewide Competency Director, Curriculum Council Steering Committee

### **Graduate School Service Activities**

Graduate faculty member, Graduate Council at Hahneman University

### **Community Service (See separate list)**

Numerous boards (school, county, not-for-profit), commissions and blue ribbon advisory committees  
Weekly oped column in NW Indiana TIMES newspaper  
Selected among top 20 community leaders in Lake and Porter Counties

### **Clinical Service (past)**

#### **Electron Microscopy Services**

Performed over 700 Diagnostic Electron Microscopic Patient Examinations of Pathological Specimens in Consultation with Clinical Laboratory Directors and Associate Pathologists in 5 hospitals, generated income of over \$100,000 to Center, Presented Results at Weekly Hospital Oncology Conferences

## **RESEARCH GRANTS**

American Heart Association Grant (Indiana Affiliate) "Microvascular Proteglycans in Heart, Liver, and Intestines" (\$25,000) 1981-1983

American Heart Association Grant (Indiana Affiliate) "Functional Mechanisms in Developing Capillaries" (\$28,000) 1984-1986

Biomedical Research Support Grant-"Tissue Specific Endothelial Glycoproteins in the Rat"(\$21,000) 1989-1991

## **TEACHING GRANTS**

"Faculty Development for the Competency Curriculum: Triple Jump Exam and Likert Scale Assessments." Principal Investigator, Patrick Bankston, Co-Investigator, W. Marshall Anderson. Educational Research and Development Grant funded by Indiana University School of Medicine, 1999-2000, \$5,000.

"A Computerized Triple Jump Examination: A Pilot Exam with Statewide Applicability." Principal Investigator, Patrick Bankston, Co-Investigator, W. Marshall Anderson. Educational Research and Development Grant funded by Indiana University School of Medicine, 1999-2000, \$5,000.

"A Faculty Development Videotutorial to Demonstrate Competency Assessment in PBL Settings- Pilot Testing at a Center for Medical Education and a Clinical Department. Principal Investigator, Patrick Bankston, Co-Investigator, W. Marshall Anderson. Educational Research and Development Grant funded by Indiana University School of Medicine, 2000-2001, \$6,000.

A Spirituality in Medicine Curriculum Enhancement to the Competency Curriculum: Grand Rounds Discussions, PBL Cases and OSCE Experiences to Assess Several Competencies. Co-Principal Investigators Patrick Bankston, W. Marshall Anderson. Educational Research and Development Grant funded by Indiana University School of Medicine, 2001-2002, \$9,693.

## INVITED ADDRESSES ON SCIENTIFIC TOPICS

- 1974 Research Seminar - Medical College of Pennsylvania, Department of Anatomy Philadelphia, PA "Development of Fetal Liver"
- 1974 Research Seminar - Hershey Medical College, Department of Anatomy, Hershey, PA "Migration of Blood Cells in the Fetal Liver"
- 1976 Research Seminar - Howard University School of Medicine, Department of Anatomy, Washington D.C., "Freeze-Drying of Biological Tissue for Ultrastructure"
- 1978 Research Seminar - Loyola University, Stritch Sch. of Medicine, Department of Anatomy, Maywood, IL "Peroxidase, TPP'ase and Acid-Phosphatase in Fetal Kupffer Cells"
- 1978 Research Seminar - Northwest Center for Medical Education, Indiana University School of Medicine, Gary, IN "The Development and Cytochemistry of Liver Sinusoidal Cells"
- 1981 Research Seminar - University of Illinois, School of Dental Medicine, Chicago, IL, "Ultrastructural Development of Capillaries"
- 1981 Guest Lecture - St. Mary Medical Center, Gary, IN, "Electron Microscopic Techniques for the Study of Cell Structure - Their Strength and Limitations"
- 1981 Seminar - American Association of Pathologist Assistant's Annual Meeting, Chicago, IL "Cell Biology in Relation to Electron Microscopy"
- 1982 Research Seminar - Louisiana State University School of Medicine, Department of Anatomy, New Orleans, LA "Studies of Fenestrated Endothelia in Fetal and Adult Rats"
- 1983 Research Seminar - Indiana University School of Medicine, Fort Wayne Center for Medical Education, Fort Wayne, IN, "The Functional Development of Capillaries"
- 1984 Research Seminar - Indiana University School of Medicine, Department of Anatomy, Indianapolis Medical Center, "The Differentiation of Cell Surface Features in Endothelial Cells of Fenestrated Capillaries"
- 1984 Guest Lectures-Indiana University School of Medicine, Indianapolis Medical Center to First Year Medical Students in Gross Anatomy, "The Development of the Cardiovascular System"
- 1985 Research Seminar-Indiana University School of Medicine, Indianapolis Medical Center, Department of Physiology, "Functional Aspects of Capillary Development"
- 1986 Medical Grand Rounds - St. Catherine Hospital, East Chicago, IN "Recent Developments in Diagnostic Electron Microscopy"
- 1988 Porter County Medical Society Basic Science Lectureship "Endothelial Cells in Health and Disease"
- 1989 Northwest Center for Medical Education, "Lung Specific Endothelial Glycoproteins"
- 1991 University of Illinois School of Medicine, "Lung Specific Endothelial Glycoproteins"

## INVITED ADDRESSES ON TEACHING AND EDUCATIONAL RESEARCH TOPICS

- 1984 Guest Lectures- People's Republic of China, Shanghai Medical College, Department of Anatomy and Department of Histology and Embryology, "The Teaching of Histology and Cell Biology at Indiana University School of Medicine"
- 1985 Workshop-Purdue University (Calumet), "The Scientist as a Renaissance Man (or Woman)" to public school Science Teachers and Students, sponsored by the Calumet Area Science Teachers Assn.
- 1990 Panel Discussion on new Human Structure PBL course at the Northwest Center at the annual Anatomy Discipline Meeting of Indiana University
- 1993 Workshop and Case Simulation of PBL case at the annual Discipline Meeting of Indiana University
- 2000 Workshop on PBL case writing at a Pathology Teaching Group national meeting, Group for Research in Pathology Education, Annual Meeting, Purdue University, West Lafayette, Indiana
- 2001 Workshop on implementation of the Competency Curriculum at IUSM at the annual meeting of the Central Group for Educational Affairs, Am. Assn. Medical Colleges (Chicago, Illinois)
- 2001 Workshop on PBL and case simulation to the nursing faculty of IUN in Gary
- 2001 Workshop on PBL to the science faculty at West Side High School in Gary
- 2002 Orientation talk to whole class of first year IUSM students "Relationship of Basic and Clinical Science"
- 2003 Workshop on PBL to IUN Faculty at the invitation of the Center for Excellence in Teaching and Learning
- 2002 Planned and Facilitated first statewide All-Regional Center Retreat where teaching and research innovations were shared

- 2002 Presented Surgery Grand Rounds to IUSM Surgery faculty on the “Theory and practice of PBL in medical schools”
- 2003 Consultation on Competency Curricular Development “The Development of the Competency Curriculum at Indiana University School of Medicine” to Competency Task Force at Loyola Stritch School of Medicine

## RESEARCH PUBLICATIONS

### PAPERS

- 1974 **Bankston, P.W.** and P.H. DeBruyn. The Permeability to Carbon of the Sinusoidal Lining Cells of the Embryonic Rat Liver and Rat Bone Marrow. *Am. J. Anat.* 141: 281-289.
- 1979\* Pino, R.M., L. Terracio, and **P.W. Bankston.** The Use of Glycerine to Improve Morphology of Frozen Sectioned Material for Ultrastructural Cytochemistry. *Stain Technology* 53:353-355.
- 1979\* Pino, R.M. and **P.W. Bankston.** The Development of the Sinusoids of Fetal Rat Liver: Localization of Endogenous Peroxidase in Fetal Kupffer Cells *J. Histochem. Cytochem.* 27: 643-652.
- 1980\* **Bankston, P.W.** and R.M. Pino. The Development of the Sinusoids of Fetal Rat Liver: Morphology of Endothelial Cells, Kupffer Cells, and the Transmural Migration of Blood Cells into the Sinusoids. *Am. J. Anat.* 159:1-15.
- 1981\* Terracio, L., **P.W. Bankston,** and J.A. McAteer. Ultrastructural Observations on Tissues Processed by a Quick-Freezing Rapid-Drying Method: Comparison with Conventional Specimen Preparation. *Cryobiology* 18: 55-71.
- 1981\* Milici, A.J. and **P.W. Bankston.** Fetal and Neonatal Rat Intestinal Capillaries: A TEM Study of Changes in the Mural Structure. *Am. J. Anat.* 160: 435-448.
- 1981\* Pino, R. M., L.C. Pino, and **P.W. Bankston.** The Relationships Between the Golgi Apparatus, GERL, and Lysosomes of Fetal Rat Liver Kupffer Cells Examined by Ultrastructural Phosphatase Cytochemistry. *J. Histochem. Cytochem.* 29: 1061-1070.
- 1982\* Milici, A.J. and **P.W. Bankston.** Fetal and Neonatal Rat Intestinal Capillaries: Permeability to Carbon, Ferritin, Hemoglobin and Myoglobin. *Am. J. Anat.* 165: 165-186.
- 1983\* **Bankston, P.W.** and A.J. Milici. A Survey of the Binding of Poycationic Ferritin in Several Capillary Beds: Indication of Heterogeneity in the Luminal Glycocalyx of Fenestral Diaphragms. *Microvasc. Res.* 26: 36-48.
- 1983\* Pino, R.M. and **P.W. Bankston.** Phagosome-Lysosome Interactions Related to Erythrophagocytosis in Fetal Rat Liver Kupffer Cells. *Cell Tissue Res.* 231: 49-54.
- 1983\* Macchia, D. D., and **P.W. Bankston.** Anion Permeability and Tissue Morphology of Ringer Perfused Rat, Guinea Pig, and Hamster Ventricle. *Experientia* 39: 1291-1293.
- 1985\* DeBruyn, P.H., S. Michelson, and **P.W. Bankston.** In Vivo Endocytosis by Bristle Coated Pits and Intracellular Transport of Endogenous Albumin in the Endothelium of the Sinuses of Liver and Bone Marrow. *Cell Tissue Res.* 240: 1-7.
- 1987\* Porter, G. A. and **P.W. Bankston.** The Maturation of Myocardial Capillaries in the Fetal and Neonatal Rat: An Ultrastructural Study with a Morphometric Analysis of the Vesicle Population. *Am. J. Anat.* 178:116-125.
- 1987\* Hoftiezer, V., **P.W. Bankston,** and P-O Berggren. Evidence for the Presence of Virus in Clonal Insulin Producing RIN m5F Cells. *Experientia* 43: 420-421.

1987\* Porter, G.A. and **P. W. Bankston**. Myocardial Capillaries in the Fetal and Neonatal Rat: A Morphometric Analysis of the Maturing Myocardial Capillary Bed. *Am. J. Anat.* 179: 108-115.

1987\* Porter, G.A. and **P.W. Bankston**. The Functional Maturation of Myocardial Capillaries in the Fetal and Neonatal Rat: Permeability Characteristics of Developing Myocardial Capillaries. *Am. J. Anat.* 180: 323-331.

1988\* Baldwin, W.W. and **P.W. Bankston**. The Efficacy of Making Live Bacterial Cell Size Measurements using Normarski Interference Microscopy and Stereological Methods. *J. Applied and Environmental Microbiology* 54: 105-109.

1988\* Baldwin, W. W., M.J-T Sheu, **P.W. Bankston**, and C. Woldringh. Changes in Bouyant Density and Cell Size of *Escherichia coli* in Response to Osmotic Shocks. *J. Bacteriology* 170: 452-455.

1991\* **Bankston, P.W.**, G.A. Porter, A. J. Milici and G.E. Palade. Differential and Specific Labeling of Vascular Endothelial Cells of the Rat Lung by *Lycopersicon esculentum* and *Griffonia simplicifolia* lectins. *European J. Cell Biology* 54: 187-195.

1991\* Sjöholm, A., Welsh, N., **Bankston, P. W.**, Hofteizer, V., and Hellerstrom, C. Increased glucose oxidation and contents of insulin and ATP in polyamine-depleted rat insulinoma cells (RINm5F). *Biochem. J.* 277:533-540.

2001\* Smolkova, O., Zavadka, A., **Bankston, P.W. .**, and Lutsyk, A. Cellular heterogeneity of rat vascular endothelium as detected by HPA and GS I lectin-gold probes. *Med. Sci. Monit.* 7: 659-668

\*Asterisk indicates publications while at Indiana University.

#### **CHAPTERS IN BOOKS, EXPANDED ABSTRACTS, BOOK REVIEWS, LETTERS**

1977 **Bankston, P.W.** *Review of Histology and Embryology* (ed. P.S. Amenta), Chapters 5, Blood; 8, Blood Formation; 13, Blood and Lymph Vascular Systems; 14, Immune Systems; 15, Thymus 16, Lymph Nodes; 17, Spleen; Arco Publishing Co., Inc. New York.

1977 **Bankston, P.W.** and L. Terracio. Contrast Enhancement of Fresh Frozen-Dried Tissue for Light and Electron Microscopy. *Proceedings of the Electron Microscopy Society of America. 35th Annual Meeting*, pp. 548-549.

1978 **Bankston, P.W.** Chapter 9, Hematopoiesis and Lymphopoiesis in *Histology*. P.S. Amenta, ed.; Arco Publishing Co., Inc., New York, New York.

1987\* Somani, I.K., E.J. Mason, and **P.W. Bankston**. Review of Diagnostic Electron Microscopy by Feroze Ghaddially, in *Canadian Medical Association Journal* 136:16.

Not Listed – 28 Scientific Abstracts of Presentations at National and International Meetings

#### **PBL CASES AND TUTOR GUIDES – Written from actual patient case chart information**

"John Smith's Thigh Pain" Osteosarcoma of Distal Femur

"Dave Turin's Heartburn" Angina with Coronary Artery By-Pass

"Jane Donahue's Cough" Small Cell Carcinoma of the Lung

"Mary Crawford's Palpitations" Atrial Fibrillation, Conversion, Infarct of Sup. Mes. Art.

"Ann Rappaport's Neck Mass" Hodgkins Disease

"Bob Thompson's Motorcycle Lesson" MVA Trauma to Kidney, Penile Urethra

"Debra Alar's Small Baby" Achondroplasia

"Even the Devil's Disciples Have a Heart" Cardiomyopathy with Heart Transplant

"Maurice Wright's Possible Tuberculosis" Large Cell CA in Apex of Lung, coauthor with Dr. R. Goulet,

"Steven's Failure to Thrive" I-Cell Disease

"Samatha Ewing's Pop" Osteomyelitis with *S. milleri* Abscess, Pathological Fracture of

"Mr. Marlowe's Stomach Ache" Carcinoid Syndrome, Metastatic Carcinoid Tumor

"Gerald Ewell - The Case of the Not-So-Strong Right Arm" Pancoast Tumor with Horner's

## **PAPERS, ABSTRACTS, DEMONSTRATIONS, WORKSHOPS ON EDUCATIONAL TOPICS PRESENTED AT NATIONAL AND REGIONAL MEETINGS**

1994 V. Hoftiezer, P.G. Iatridis, **P.W. Bankston**. Student evaluation in the Regional Center Alternative Pathway- a Problem-Based Learning Curriculum - Compatible with a Traditional Grading System. (Presented at the 1994 Annual Meeting of American Association of Medical Colleges, Washington, D.C.)

1995 **P.W. Bankston**. The Case as the Integrator of Basic and Clinical Sciences. Workshop on Integration of Basic and Clinical Sciences, organized by P.G. Iatridis. (Presented at Spring Annual Meeting of Central Group for Educational Affairs, American Association of Medical Colleges regional meeting, Columbus, Ohio)

1995 S. Vaughn, **P.W. Bankston**, and P. G. Iatridis. Faculty Development in a Problem Based Learning Curriculum: An Assessment of Faculty Development Needs and What Constitutes a Comprehensive Program (Presented at the 1995 Annual Meeting of the American Association of Medical Colleges, Washington, D.C.)

1996 **P.W. Bankston**, S. Vaughn, and P.G. Iatridis. Managing Content Resources for a PBL Curriculum - Optional, Student Scheduled, and Time-Shifted Lectures (Presented at the 1996 Annual Meeting of the American Association of Medical Colleges, San Francisco, CA)

1996 P.G. Iatridis, W.M. Anderson, D. Gupta, N. Hudson, V. Hoftiezer, **P.W. Bankston**, J.C. Vanden Berge, S.F. Echtenkamp, B.G. Kennedy, S.P. Sivam, C.F. Marfurt, S.D. Vaughn. Macroanalysis of Integration of the Basic Sciences in a Problem-Based Learning Curriculum (Proceedings of the 7th Annual Ottawa International Conference on Medical Education and Assessment, Maastricht, The Netherlands)

1997 **P.W. Bankston**, M. Anderson, V. Hoftiezer, P.G. Iatridis, J. Vanden Berge. Lectureless Basic Science: Simple Electronic Innovations Which Enhance Active Learning and the Role of Faculty as Resources (Presented at Symposium on Electronic Trends in Medical Education, Indianapolis, IN)

1997 **P.W. Bankston**, M. Anderson, V. Hoftiezer, P.G. Iatridis, J. Vanden Berge. Lectureless Basic Science: Simple Electronic Innovations Which Enhance Active Learning and the Role of Faculty as Resources ( Presented at Third Biennial International Basic Science Educational Forum, Charleston, SC)

1997 P.G. Iatridis, W.M. Anderson, **P.W. Bankston**, S. Echtenkamp, D. Gupta, V. Hoftiezer, N. Hudson, B. Kennedy, C. Marfurt, S. Sivam, N. Sakellaridis, S. Vaughn. Final Exams (Internal vs. External) and Their Impact on Learning in a PBL Curriculum (Presented at the annual meeting of the Association for Medical Education in Europe, Teaching and Learning Conference, Vienna, Austria)

1999 **P. W. Bankston**, V. Hoftiezer, G. Lonak, J.Vanden Berge, W. Anderson. OSCE/Triple Jump Exam to Assess Several Competencies: Innovations in a Competency Curriculum at Indiana University (Presented at Fourth Biennial Conference of the International Association of Medical Science Educators, Washington, DC)

1999 W. Baldwin, **P.W. Bankston**, W. Anderson and P.G. Iatridis. USMLE Scores from Students in a Problem Based Curriculum at Indiana University School of Medicine, Northwest Center for Medical Education (Presented at Fourth Biennial Conference of the International Association of Medical Science Educators, Washington, DC)

1999 **P.W. Bankston**, V. Hoftiezer, G. Lonak, J. Vanden Berge, W. Anderson. OSCE/Triple Jump Exam to Assess Several Competencies: Innovations in a Competency Curriculum at Indiana University. (Presented at Fourth Biennial Conference of the International Association of Medical Science Educators, Washington, DC)

2001 W. Anderson and **P.W. Bankston**, An Online, Web-Based Triple Jump Examination as an Assessment Tool in a Competency Curriculum. (Presented at the Central Group for Educational Affairs, Regional Meeting of American Association of Medical Colleges, Rochester, MN)

2001 **P.B. Bankston** and G. Porter, A Five Step Approach to Clinical Case Writing in the Structural Sciences (Gross Anatomy, Histology, Embryology, Radiology, Surgery and Anatomic Pathology) J. Path. Ed. 25:42-44

2002 W. Baldwin, **P.W. Bankston**, W. Anderson, P. Smith, R. Haak, P.G. Iatridis. USMLE Scores from Students in a Problem Based Curriculum at Indiana University School of Medicine, Northwest Center for Medical Education. Medical Education 36:791

2002 W. Marshal Anderson and Patrick Bankston, Spirituality in Medicine: A Seminar Series Broadcast Live to the State-wide Medical Education System in Indiana (Presented at the annual meeting of the Central Group for Educational Affairs of the American Association of Medical Colleges, Chicago, IL)