

BIOGRAPHICAL SKETCH

Phillip H. Pekala

Personal Information

Born: 12 April, 1949, New Kensington, PA
Marital Status: Married with two children
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Educational Background

St. Vincent College, Latrobe, PA	BS (Chemistry)	1971
Indiana University of Pennsylvania, Indiana, PA	MS (Chemistry)	1974
Virginia Polytechnic Institute and State University, Blacksburg, VA	Ph.D. (Biochemistry)	1978
The Johns Hopkins University School of Medicine, Baltimore, MD	Postdoctoral Fellow (Physiological Chemistry)	1981

Professional Experience

1971-1972: Graduate teaching assistant, Department of Chemistry, Indiana University of Pennsylvania. Taught General Chemistry laboratory.
1972-1973: Graduate research assistant with Dr. R. A. Hartline, Department of Chemistry, Indiana University of Pennsylvania.
1974-1978: Graduate research assistant with Dr. B. M. Anderson, Department of Biochemistry, Virginia Polytechnic Institute and State University.
1978-1981: Postdoctoral research associate with Dr. M. Daniel Lane, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine.
1979-1980: Johns Hopkins University School of Medicine, General Medical Biochemistry and Recitation Section Discussion leader.
1981-1986: Assistant Professor, Department of Biochemistry, School of Medicine, East Carolina University, Greenville, NC.
1985-1987: Consultant to Biogen, Inc.
1985-1988: Admissions Committee, East Carolina University School of Medicine.

Professional Experience (con't.)

- 1986-1992: Associate Professor, Department of Biochemistry, School of Medicine, East Carolina University. Greenville, NC.
- 1987-1991: Member basic science study section, American Institute for Cancer Research.
- 1988-1992: Member of the External Advisory Committee for the Program Project grant on "Tumor Necrosis Factor and Metabolism", Louisiana State University School of Medicine, Department of Physiology.
- 1988 : Invited faculty opponent for the Dissertation Defense of Henrik Semb, Department of Physiological Chemistry, University of Umea, Umea Sweden.
- 1989-1991: Chairman, Pilot and Feasibility Grant Program in Diabetes Research, Diabetes Center, East Carolina University School of Medicine.
- 1990 : Invited external examiner for the Dissertation of Shrikant Mishra, Basic Science Division, School of Veterinary Medicine, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.
- 1990-1991: *Ad hoc* member, NIH Metabolic Pathology Study Section.
- 1991-1995: Member, NIH Metabolic Pathology Study Section.
- 1992- : Professor, Department of Biochemistry, School of Medicine, East Carolina University, Greenville, NC.
- 1994-1999: Member, Editorial Board, *Journal of Biological Chemistry*.
- 1995-1999: NIH Reviewers Reserve.
- 1999-2001: Member, NIH Metabolic Pathology Study Section (second term).
- 2000 Adjunct Professor, Biological Sciences, Odense University, Odense, Denmark. Two month tenure with salary & benefits to function as member of a faculty search team.
- 2000-2005: Member, Editorial Board, *Journal of Biological Chemistry* (second term).
- 2000 : Co-Founder EnzRel Inc.
- 2001 : Member, NIH Special Emphasis Study Section on establishment of a Biomedical Research Infrastructure Network.
- 2002 : Designated Brody School of Medicine *Master Educator*.
- 2003 : University of North Carolina Board of Governors Award for Excellence in Teaching
- 2002-2005: Research Committee, Brody School of Medicine
- 2004-2006: Assistant Dean for Research, Brody School of Medicine
- 2005-2006: Associate Director for Research, Leo Jenkins Cancer Center
- 2006- : Interim Chair, Department of Biochemistry & Molecular Biology
- 2008 : Virginia Tech, Department of Biochemistry, College of Agriculture and Life Science, Outstanding Research Alumnus Award
- 2008-2012: Member, Editorial Board, *Journal of Biological Chemistry* (third term)

Society Memberships

American Society of Biological Chemists and Molecular Biologists

American Diabetes Association

Grant Awards

United States Public Health Service National Research Service Award (1 F32 AM06028-01), 1978. Insulin and Regulation of Carboxylase Phosphorylation.

American Cancer Society Fellowship (PF1950), 1980. Relationship Between Poly ADP-Ribosylation and Differentiation of 3T3-L1 Preadipocytes.

The East Carolina University, School of Medicine Biomedical Research Support Grant (70562), 1981. The Relationship Between Poly ADP-Ribose Synthesis and Preadipocyte Differentiation.

Research Corporation, Cottrell Research Grant, 1982. Poly ADP-Ribose and Preadipocyte Differentiation.

North Carolina Board of Science and Technology Research Grant (84-3297), 1984-1985. Studies of a Macrophage Secretory Protein that Regulates Metabolism.

The East Carolina University School of Medicine Biomedical Research Support Grant (2 SO7-12RO5812-12), 1992.

National Institute of General Medical Sciences, United States Public Health Service Research Grant (3 PO1 GM32654-09S1), 1992-1994. Mechanisms Mediating Metabolic Changes in Sepsis. This was part of a joint program between my laboratory and the Department of Physiology, LSU School of Medicine.

NIAAA Center Award (1 P50 AA09803-01), 1993-1996, entitled, "Alcohol Research Center: Alcohol, Infection and Host Response." This award was for a cooperative effort between my laboratory and the Department of Physiology, LSU School of Medicine.

North Carolina Board of Science and Technology Research Grant (94B-ARG-0082), 1994-1996. Fatty Acid Regulation of the Insulin Responsive Glucose Transporter (GLUT-4) Gene Expression.

North Carolina Institute of Nutrition (2-93421), 1994-1998. Fatty Acid Regulation of Gene Expression.

National Institute of General Medical Sciences, United States Public Health Service Research Grant (1 RO1 GM32892), 1984-1999, A Macrophage Endogenous Factor that Suppresses Anabolism.

National Institute of Diabetes and Digestive and Kidney Diseases, United States Public Health Service Research Grant (1 RO1 DK55769), 1999-2006, Regulation of Glucose Transporter mRNA Stability.

American Diabetes Association Research Award, 2003-2007, The Regulation of Adipose Tissue Metabolism by the RNA Binding Protein HuR.

Invited Reviewer For:

The Journal of Clinical Investigation, The Journal of Lipid Research, Gene American Journal of Physiology, Molecular Endocrinology, Endocrinology, Biochem. Biophys. Acta, Oncogene, Molecular Endocrinology

School of Medicine Committee Membership:

1985-1988: Medical School Admissions Committee
 1987-1990: Radiation Safety Committee
 1988-1995: Ad Hoc Microbiology Promotion and Tenure Committee
 1988-1990: Microbiology Faculty Search Committee
 1988-1995: Executive Committee, Diabetes Center
 1989-1993: Executive Committee, Cancer Center
 1989-1993: Advisory Board for Preventative Cardiology
 1989-1993: Family Practice (M-1) Curriculum Committee
 1989-1993: Pathology Curriculum Committee
 1989-1991: Chairman, Pilot and Feasibility Grant Program in Diabetes Research, Diabetes Center
 1991-1994: Core Facility Advisory Committee
 1996-1998: School of Medicine Research Planning Committee
 1997-2005: Medical Student Summer Research Planning Committee
 1998-2003: Executive Curriculum Committee
 2001-2003: Medical School Promotion & Tenure Committee
 2001-2005: Co-Director Medical Student Summer Research Program

Students Trained in my Laboratory:

1. **S. Russ Price** Ph.D. (1986)
Dissertation Title: The regulation of lipoprotein lipase synthesis in 3T3-L1 adipocytes by endotoxin-induced macrophage monokines.
Postdoctoral: Fellow in the laboratory of Joel Moss, National Heart, Lung and Blood Institute.
Current Position: Professor, Departments of Medicine & Physiology, Emory University School of Medicine.

2. **M. Douglas Lee** M.S. (1986)
Thesis Title: Monokine regulation of hexose metabolism in L6 myotubes.
Further Education: Medical student at ECU School of Med 1986-1991. Howard Hughes Fellow at the National Institutes of Health, 1988-1989 (the first from our institution).

Fellowship: Pulmonary critical care, The Johns Hopkins University School of Medicine. Performing research on water channels in the laboratory of Peter Agre, Department of Biological Chemistry.

Current Position: Assistant Professor, Department of Medicine, UNC-Chapel Hill

3. **Peter Cornelius** Ph.D. (1989)
Dissertation Title: Monokine regulation of lipoprotein lipase and glucose transporter gene expression.
Postdoctoral Fellowship: The laboratory of Dr. M. D. Lane, Department of Biological Chemistry. The Johns Hopkins University School of Medicine.
Current Position: Research Scientist with Pfizer Central Research, Groton, CT.

4. **Jacqueline M. Stephens** Ph.D. (1992)
Dissertation Title: Regulation of glucose transporter gene expression by tumor necrosis factor- α in 3T3-L1 preadipocytes and adipocytes.
Postdoctoral Fellowship: The laboratory of Dr. Paul Pilch, Department of Biochemistry, Boston University School of Medicine.
Current Position: Professor, Department of Biological Sciences, LSU Baton Rouge, with a joint appointment in the Pennington Center.

5. **Kevin McGowan** Ph.D. (1995)
Dissertation Title: Mechanisms of tumor necrosis factor- α induced alterations in glucose transporter (GLUT-1) mRNA stability in fibroblasts.
Postdoctoral Fellowship: The laboratory of Dr. Pierre Coloumb, Department of Biological Chemistry, The Johns Hopkins University School of Medicine.
Current Position: Assistant Professor, Department of Medicine, UNC-Chapel Hill.

6. **Sheree Long** Ph.D. (1995)
Dissertation Title: Mechanisms of tumor necrosis factor- α induced glucose transporter (GLUT-4) mRNA stability in adipocytes.
Postdoctoral Fellowship: laboratory of Dr. Yusuf Hannun, The Departments of Biochemistry and Hematology/Oncology, The Duke University Medical School.
Current Position: Research scientist with Biacore, Inc.

7. **Renu Jain** Ph.D. (1997)
Dissertation Project: Tumor necrosis factor- α mediated activation of signal transduction cascades and transcription factors in the 3T3-L1 adipocytes.
Postdoctoral Fellowship: laboratory of Dr. Channing Der, Lineberger Cancer Center, School of Medicine, UNC-Chapel Hill.
Current Position: Scientist II, Clinical Development (HIV), GlaxoSmithKline, RTP, NC.

8. **Raleigh Tenney** M.S. (2003)
Thesis Project: Regulation of G α i2 expression in 3T3-L1 adipocytes by Interleukin 11.

Current position: Research Scientist, Diabetes & Obesity Division, Eli Lilly, Indianapolis, IN.

9. **Vesna A. Karschner** Ph.D. (expected 2009)
Thesis Project: The role of the RNA binding protein HuR in the control of C/EBP β expression.

Non-Degree Student:

1. **Melissa Marlowe Coale**
 Research Assistant in my laboratory 1985-1989, but behaved like a graduate student.
Further Education: Medical student ECU School of Medicine 1989-1994. Awarded a Howard Hughes Fellowship at the NIH after her second year of medical school, 1991-1992.
Residency: Internal Medicine, Bowman-Gray; Fellowship: Dermatology, Medical College of South Carolina.
Current Position: Private practice, Charlotte, NC.

Postdoctoral Fellows:

1. **Chen Qi M.D.**
 Fellow in my laboratory from 1998-2001.
M.D.: Capital Univ. of Medical Science, Beijing, China, 1992
Current Position: Research Associate, Department of Surgery, University of Wisconsin at Madison.
2. **Kira Gantt, Ph.D.**
 Fellow in my laboratory from 2002 - 2004
Ph.D.: University of Iowa, Immunology & Parasitology, 2002
Project: The regulation of adipocyte gene expression by the RNA binding protein HuR.
Current Position: Postdoctoral Scholar, Dept. of Immunology, Univ. of Pittsburgh

Undergraduate Students:

1. **Michelle Butts:** 1989-1990 undergraduate student worker.
 1990-1991: Research Technician in Pekala laboratory.
 1991-1995: Medical student at the Brody School of Medicine.
2. **Raleigh Tenney:** 1999- 2001 undergraduate student worker.
 2001 - 2002: Research technician in my laboratory.
 2002 - 2003: Masters degree student in my laboratory.
3. **Maria Chacon Hesele:** 2002- 2004 undergraduate honors thesis student.

2003: received funding for her application to the Summer Undergraduate Research Fellowship from Pfizer Research. She presented the results of her research at Pfizer in Groton, CN in October, 2004. Candidate for the Ph.D. in Cell & Molecular Biology at Emory University School of Medicine.

Membership on Ph.D. Dissertation Committees:

Department of Biochemistry

Mark Hemrick, Ph.D. (1990)
 Darrell Neuffer, Ph.D. (1993)
 Lilla Somerville, Ph.D. (1999)
 Steven Pohnert, Ph.D. (2002)
 Melissa Richardson
 Mohit Mathur

Department of Microbiology

Barry Stripp, Ph.D. (1989)
 Scott Coburn, Ph.D. (1990)
 Paul Algate, Ph.D. (1993)
 Marc Rogers, Ph.D. (1994)
 Xiao-yang Wang, Ph.D. (1997)
 Paula Arnold, Ph.D. (1998)
 Paul Hoyle, Ph.D. (1998)
 William Blalock, Ph.D. (1999)
 Carolyn Weinstein-Oppenheimer, Ph.D. (2001)
 Christopher Howe, Ph.D. (2004)
 John Lee, Ph.D. (2004)
 Patrick Novalonik, Ph.D. (2004)

Department of Physiology

Guy Groblewski, Ph.D. (1991)
 William Stewart, Ph.D. (1994)
 Joe Christian, Ph.D. (2002)
 Alan Stephenson, Ph.D. (2005)

Department of Pharmacology

Daniel Cushing, Ph.D. (1990)
 Kevin Foley, Ph.D. (2002)

Summer Medical Student Fellows:

Heath Jones, 2005*†	Melissa Coale, 1990*†
Karrie A. Stansfield, 2002*†	Ken Call, 1989*†
Jennifer R. Turnbull, 2001*†	M. Douglas Lee, 1989*†
James Wheeler, 1999*†	Judith Spivey, 1985*
Laurie Johnson, 1999	Cathy Horn, 1986*†
James DeVente, 1998*	Seaborn Blair, 1984
Michelle Butts, 1996*†	Willis M. Privott, 1982
Joy Sigmon, 1991*	Wiley M. Davis, 1982

Summer Medical Student Fellows (continued)

Maria Small* in 1994 was awarded a National Medical Fellowship and worked in my laboratory over the course of the academic year.

*indicates that a student was a co-author on an abstract presented at a national meeting.

† Indicates that the student was a co-author on a published manuscript.

Teaching Assignments:

Current (2002-03)

1. Medical Course:

BIOC 6300 Medical Biochemistry: 9-1hr lectures on lipid metabolism

6-1 hr lectures on protein synthesis and regulation

14-1 hr conferences/small group sessions

2. Graduate Courses:

BIOC 7301 Biomolecular Structure: 6-90min lectures on lipid structure, function & metabolism

BIOC 8320 Regulation of Metabolism: 8- 90 min lectures on advanced topics in lipid metabolism. Also serve as course director.

In previous years my major teaching assignments have been in BIOC 6300 and the graduate course BIOC 6310 Molecular Biochemistry, in which I presented 15-75 min lectures and 2-75 min problem solving sessions. My section of the course detailed protein synthesis and regulation.

3. Summer Course for Future Physicians:

6- 1 hour lectures on lipid metabolism

Invited Talks

"Model for cachexia in chronic disease: secretory products of endotoxin-stimulated macrophages induce a catabolic state in 3T3-L1 adipocytes." Presented to the Department of Biochemistry, University of Pittsburgh, School of Medicine, April, 20, 1984.

"Regulation of metabolism during infection." Presented to the Department of Chemistry, Indiana University of PA, October 5, 1984.

"Regulation of 3T3-L1 adipocyte metabolism by an endotoxin-induced macrophage secretory protein." Presented to the Chemistry Department, Biochemistry Section, Arizona State University, March 18, 1985.

"Regulation of 3T3-L1 adipocyte metabolism by endotoxin-induced macrophage secretory proteins." Presented to the cytokine research group of Biogen Corp. Boston MA, May 6, 1985.

"Cytokine regulation of hexose metabolism in L6 myotubes." presented to the St. Vincent College Alumni Chemical Sciences Symposium, November, 14, 1986.

"Regulation of cellular metabolism by tumor necrosis factor." Presented at the 23rd National Meeting of the Reticuloendothelial Society, Denver, CO, September 5, 1986.

"Monokine regulation of cellular metabolism." presented in the Vanderbilt University Basic Medical Sciences Seminar Series, October 15, 1986.

"Metabolic responses to tumor necrosis factor." presented to the Biology Club, St. Andrews Presbyterian College, Laurinburg, NC, March 19, 1987.

"Regulation of lipid metabolism by TNF and IL-1. Presented in the Departments of Biochemistry & Endocrinology (Medicine) Seminar Series, April 5, 1987.

"Effects of TNF and related monokines on adipocyte metabolism." Presented to the Department of Physiological Chemistry, University of Umea, Umea, Sweden. April 12, 1988.

"The regulation of energy storage tissue metabolism by tumor necrosis factor." presented to the Cancer Nutrition Laboratory, Cancer Prevention Research Program, NCI, NIH, July 11, 1988.

"Regulation of 3T3-L1 preadipocyte metabolism by tumor necrosis factor." presented at the Department of Biological Chemistry Johns Hopkins University School of Medicine Noon Journal Club, June 15, 1988.

"Monokine regulation of cellular metabolism." presented to the Metabolic Research Group, Monsanto Company, St. Louis, MO, October 28, 1988.

"Regulation of cellular metabolism by tumor necrosis factor." presented as a Distinguished Lecture in the Department of Physiology Seminar Series, LSU School of Medicine, January 16, 1989.

"Regulation of glucose transport and transporter gene expression by tumor necrosis factor and 8-bromo-cAMP." Presented as an invited talk for the Diabetes Day events at the ECU School of Medicine, November 30, 1989.

"Regulation of hexose metabolism in quiescent 3T3-L1 fibroblasts by tumor necrosis factor." Presented in the Molecular Biology lecture series at the National Institutes on Aging (NIH) Baltimore MD, December 5, 1989.

"Regulation of hexose transport by tumor necrosis factor." Presented in the Physiological Sciences seminar series at the National Institute of General Medical Science (NIH) Bethesda, MD, March 7, 1990.

"Tumor necrosis factor and metabolism." Presented to the Biology Department, Davidson College, March 23, 1990.

"Regulation of glucose transporter gene expression during tumor necrosis factor induced cell cycle progression." Presented at the International Meeting for Advances in Understanding Trauma and Burn Injury, June 21, 1990.

"Regulation of hexose uptake by TNF in 3T3-L1 fibroblasts." Presented to the Department of Hematology & Oncology, Duke University School of Medicine, August 1, 1990.

"Regulation of glucose transporter gene expression in 3T3-L1 fibroblasts and adipocytes by TNF." Presented to the Basic Science Division of the Virginia Polytechnic Institute & State University School for Veterinary Medicine, February 11, 1991.

"Regulation of glucose transporter gene expression in 3T3-L1 Fibroblasts and adipocytes by tumor necrosis Factor- α ." Presented to the Research Division of California Biotechnology, July 16, 1991.

"Tumor necrosis factor- α induced glucose transporter mRNA stability." Presented to the Department of Physiology, LSU School of Medicine, April 13, 1992.

"The regulation of glucose transporter gene expression by tumor necrosis factor- α " Presented to the Department of Molecular Biology, NJCMD, Stratford, NJ, February 4, 1993.

"Regulation of glucose transporter mRNA stability in 3T3-L1 adipocytes by tumor necrosis factor- α ", Presented at the FASEB Conference on Recent Advances in Glucose Transporter Biology, Snowmass, CO, August 3, 1993.

"Regulation of glucose transporter gene expression in 3T3-L1 cells." Presented to the Departments of Biology and Chemistry, UNC-G, Greensboro, NC, September 15, 1993.

"Regulation of insulin resistance by tumor necrosis factor- α ." Presented to the ECU Diabetes Research Group, Greenville, NC, December 15, 1993.

"Arachidonic acid down-regulates the insulin-dependent glucose transporter gene (GLUT-4) in 3T3-L1 adipocytes by inhibiting transcription and enhancing mRNA turnover." Presented in the Session on Regulation of Adipogenesis, Keystone Conference on the Adipose Cell, Park City, UT, January 9, 1994. Co-Chairman (with Gennette Serrero, Ph.D.)

"Regulation of adipocyte gene expression by TNF- α ." Presented at the "Adipocytes and Adiposity: Regulation by Hormones and Cytokines" symposium for the Experimental Biology 94 meeting in Anaheim, CA, April 28, 1994.

"Regulation of glucose transporter gene expression in 3T3-L1 cells by TNF- α ." Presented to the Departments of Anatomy and Biochemistry, NJCMD, Newark, NJ, May 3, 1994.

"Regulation of glucose transporter gene expression in 3T3-L1 cells by TNF- α ." Presented to the Diabetes Department at Sandoz Research Institute, East Hanover, NJ, May 4, 1994.

"Regulation of glucose transporter gene expression by tumor necrosis factor- α and fatty acids." Presented to the Biochemistry Department, West Virginia University School of Medicine, Morgantown, WV, October 5, 1994.

"Lipid mediators of insulin resistance." Presented to the Department of Nutrition, School of Public Health, UNC Chapel Hill, November 16, 1995.

"Lipid mediators of insulin resistance." Presented to the Department of Biochemistry, School of Medicine, LSU Shreveport, January 18, 1996.

"Ceramide as a regulator of GLUT4 gene expression" Presented to the Department of Chemistry, UNC-Greensboro, February 21, 1996.

"Regulation of glucose transporter gene expression: the contribution of mRNA stability." Presented to the Department of Pharmacology, University of Virginia School of Medicine. Nov. 21, 1996.

"A ceramide activated signal transduction pathway controls GLUT4 gene expression." Plenary Session on: *The Adipocyte and Disease*, Keystone Symposium on the Adipose Cell. January 20, 1997.

"Tumor necrosis factor α initiation of multiple signal transduction pathways in adipocytes: Identification of a pathway controlling GLUT4 gene expression." Advances in Enzyme Regulation Symposium, Indiana University School of Medicine. September 29, 1997.

"The regulation of adipose tissue gene expression by tumor necrosis factor α ." Presented to the Research Division of Vysis, Inc. Downers Grove, IL. October 10, 1997.

"TNF- α mediated activation of signal transduction cascades and transcription factors in 3T3-L1 adipocytes." Presented at the 38th International Symposium on Advances in Enzyme Regulation. Indianapolis, IN. September 29th, 1997.

"TNF mediated insulin resistance." Presented to the Department of Poultry Science, NC State University. October 21, 1997.

"TNF-induced insulin resistance in adipocytes." Presented to the Department of Oral Molecular Biology, School of Dental Medicine, Oregon Health Sciences University. March 17, 1998.

“The influence of mRNA stability on glucose transporter gene expression.” Presented to the Division on Signal Transduction, National Institutes Environmental Health Sciences, RTP, NC April 26, 1999.

“mRNA stability as a mechanism of controlling gene expression.” The 27th Steenbok Symposium, “Adipocyte Biology & Hormone Signaling” University of Wisconsin, Madison. June 6 - 9, 1999.

“Adipocyte expression of a neuronal RNA-binding protein.” Presented at the 41st International Symposium on Advances in Enzyme Regulation. Indianapolis, IN. October 3rd, 2000.

“RNA Binding Proteins and Glucose Transporter Gene Expression in 3T3-L1 Adipocytes” Presented to the Department of Biochemistry, Brody School of Medicine, Greenville, NC. February 5th, 2001.

“The Regulation of Glucose Transporter Gene Expression by RNA Binding Proteins” Presented to the ZenBio Corporation, Research Triangle Park, NC February 7th, 2001.

“RNA Binding Proteins and Glucose Transporter Gene Expression in 3T3-L1 Adipocytes” Presented to the Department of Biological Sciences, LSU Baton Rouge, Feb. 12th 2001.

“RNA Binding Proteins and Glucose Transporter Gene Expression in 3T3-L1 Adipocytes” Presented to the Departments of Oral Molecular Biology and Anatomy and Cell Biology, OHSU Portland, OR. March 18th 2001.

“RNA Binding Proteins and Glucose Transporter Gene Expression in 3T3-L1 Adipocytes” Presented to the Department of Microbiology and Immunology, Brody School of Medicine, Greenville, NC. April 3rd, 2001.

“The Elav family of RNA Binding Proteins and their control of Adipocyte Gene Expression” Presented to the WWAMI Faculty at Anchorage, AL. May 30th, 2001.

“Adipocyte Gene Expression: Transcriptional and Posttranscriptional Considerations” Presented to the Department of Pharmacology, Brody School of Medicine, Greenville, NC. September 5th, 2001.

“Interleukin Regulation of Adipocyte Metabolism and Gene Expression” Presented at the 43rd International Symposium on Advances in Enzyme Regulation. Indianapolis, IN. September 24th, 2002.

“RNA Binding Proteins and the Regulation of Adipocyte Gene Expression and Adipogenesis” Presented to the department of Physiology, Brody School of Medicine, January 8th 2004.

“HuR and the Regulation of Adipocyte Differentiation”. Presented to the Department of Biochemistry & Molecular Biology, Brody School of Medicine, February 16th, 2004.

“HuR and the Regulation of Adipocyte Differentiation”. Presented in the Vice Provost’s Seminar Series at UNC-Greensboro. May 5th, 2004.

“A Role for HuR in the Control of Adipogenesis”. Department of Biology, East Carolina University. October 12, 2005.

“The Pearls Lectures”. Brody School of Medicine, March 9, 2006.

“Fat Tissue: The Good, The Bad & The Ugly”. Presented on behalf of the North Carolina Association for Biomedical Research at the *Rx for Science Literacy Teacher Workshop*. September 20th, 2006.

“Control of adipocyte differentiation: Influence of C/EBP β and the RNA binding protein HuR”. Presented to the faculty of biological sciences, Washington State University, September 4th, 2007.

“Control of adipocyte differentiation: Influence of C/EBP β and the RNA binding protein HuR”. Presented to the Department of Biochemistry, Case Western Reserve University, October 18th, 2007.

“A Role for the RNA binding protein HuR in Adipogenesis”. Presented to the Brody Brothers Foundation, Brody School of Medicine, November 20th, 2007.

“A Role for the RNA binding protein HuR in Adipogenesis. Presented to the Department of Biochemistry & Nutrition, Virginia Tech, April 18th, 2008.

Published Articles

1. Pekala, P. H. and Hartline, R. A. (1973) Isolation of radioactive D- and L- α -amino adipate of high specific activity by selective bacterial metabolism, *Anal. Biochem.* **55**, 411-419.
2. Pekala, P. H., Pefetti, T. and Hartline, R. A. (1975) Physiological basis for preferential uptake of D-A-amino adipate over the L-isomer by *Alcaligenes denitrificans*. *Biochem. Biophys. Acta.* **394**, 65-75.
3. Pekala, P. H. and Anderson, B. M. (1978) Studies of the bovine erythrocyte NAD glycohydrolase. *J. Biol. Chem.* **253**, 7453-7459.

4. Pekala, P. H., Meredith, M. J., Tarlow, D. and Lane, M. D. (1978) Multiple phosphorylation of acetyl-CoA carboxylase in chick liver cells. *J. Biol. Chem.* **253**, 5267-5269.
5. Pekala, P. H. and Anderson, B. M. (1980) Self inactivation of an erythrocyte NAD glycohydrolase. *Molec. Cell. Biochem.* **31**, 49-56.
6. Pekala, P. H., Lane, M. D., Watkins, P. A. and Moss, J. (1980) On the mechanism of preadipocyte differentiation. I. Masking of poly (ADP- ribose) synthetase activity during differentiation of 3T3-L1 preadipocytes. *J. Biol. Chem.* **256**, 4871-4876.
7. Kawakami, M., Pekala, P. H., Lane, M. D., and Cerami, A. (1982) Lipoprotein lipase suppression of 3T3-L1 cells by endotoxin induced mediator from exudate cells. *Proc. Natl. Acad. Sci. U.S.A.* **79**, 912-917.
8. Watkins, P. A., Pekala, P. H., Lane, M. D., and Moss, J. (1982) Effect of differentiation on the adenylate cyclase system of 3T3-L1 preadipocytes: Determination of choleraen substrages. *J. Biol. Chem.* **247**: 14722-14725.
9. Pekala, P. H., Kawakami, M., Angus, C. W., Lane, M. D., and Cerami, A. (1983) Selective inhibition of the enzymes for *de novo* fatty acid biosynthesis by an endotoxin-induced, mediator from exudate cells. *Proc. Natl. Acad. Sci. USA* **80**, 2743-2747.
10. Pekala, P. H., Kawakami, M., Vine, W., Lane, M. D., and Cerami, A. (1983) Studies of insulin resistance in adipocytes induced by a macrophage mediator. *J. Exptl. Med.* **157**, 1360-1365.
11. Pekala, P. H., Price, S. R., Horn, C. A., Hom, B. E., Moss, J. and Cerami, A. (1984) Model for cachexia in chronic disease: secretory products of endotoxin-stimulated macrophages induce a catabolic state in 3T3-L1 adipocytes. *Trans. Assoc. Amer. Phys.* **97**, 251-259.
12. Beutler, B., Mahoney, J., LeTrang, N., Pekala, P. H. and Cerami, A. (1985) Purification of a lipoprotein lipase-suppressing hormone secreted by endotoxin-induced RAW 264.7 cells. *J. Exptl. Med.* **161**, 984-995.
13. Garris, D. R., West, R. L., and Pekala, P. H. (1986) Ultrastructural and metabolic changes associated with reproductive tract atrophy and adiposity in diabetic female mice. *The Anatomical Record* **216**, 359-366.
14. Price, S. R., Olivecrona, T., and Pekala, P. H. (1986) Regulation of lipoprotein lipase synthesis in 3T3-L1 adipocytes by cachectin - further proof for identity with tumor necrosis factor. *Biochem. J.* **240**, 601- 604.

15. Price, S. R., Mizel, S. B., and Pekala, P. H. (1986) Regulation of lipoprotein lipase synthesis and 3T3-L1 adipocyte metabolism by recombinant interleukin-1. *Biochem. Biophys. Acta* **889**, 374-381.
16. Price, S. R., Olivecrona, T., and Pekala, P. H. (1986) Regulation of lipoprotein lipase synthesis by recombinant tumor necrosis factor - The primary regulatory role of the hormone in 3T3-L1 adipocytes. *Arch. Biochem. Biophys.* **251**, 738-746.
17. Olivecrona, T., Price, S. R., Pekala, P. H., Scow, R. O., Chernick, S. S., Semb, H., Vilaro, S., and Bengtsson-Olivecrona, G. (1987) Regulation of lipoprotein lipase activity. *Proc. Int. Symp. on Drugs Affecting Lipid Metab.* **9**, 28-37.
18. Bagby, G. J. and Pekala, P. H. (1987) Lipoprotein lipase in trauma and sepsis. In: Lipoprotein Lipase (J. Borensztajn, ed.), Evener Publishers, Inc., Chicago, IL, pp. 247-275.
19. Lee, M. D., Zentella, A., Pekala, P. H., and Cerami, A. (1987) Effect of endotoxin induced monokines on glucose metabolism in the muscle cell line L-6. *Proc. Natl. Acad. Sci. U.S.A.*, **84**, 2590-2594.
20. Eades, D., Cornelius, P., and Pekala, P. H. (1988) Characterization of Human Placental TNF Receptor. *Placenta* **9**, 247-251.
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RESEARCH INTERESTS

Adipose tissue is a dynamic endocrine-like tissue, synthesizing and secreting proteins responsible for regulation of the balance between energy storage and energy expenditure. In the context of this function the adipocyte plays an important role in the pathology of both diabetes and obesity. Thus it becomes critical to understand mechanisms utilized to regulate adipose tissue gene expression. Our laboratory is focusing on mechanisms that control the transport of specific mRNAs from the nucleus to the cytosol as well as the stability and translatability of the message once it arrives in the nucleus.

HuR is an RNA binding protein that binds to nuclear mRNAs containing adenylate-uridylylate rich elements (AREs) in the 3' untranslated regions (UTR). HuR acts to chaperone the bound message to the cytosol and functions to control stability as well as translatability. HuR is constitutively expressed in both the 3T3-L1 preadipocyte and adipocyte phenotypes and localized predominantly to the nucleus, however within 30 min of exposure to the differentiation stimulus, the protein content in the cytosol doubles. This movement of HuR-mRNA complexes early in differentiation is consistent with HuR enhancing and potentially regulating the availability of relevant mRNAs to the cytosolic translation apparatus.

One of the mRNAs that forms a complex with HuR in the nucleus within minutes of induction of differentiation is that coding for C/EBP β . Our current data suggest that the HuR-C/EBP β nuclear complex while not necessary for export of the message to the cytosol serves as a regulator/attenuator of polyadenylation. As the message will not exit the nucleus until polyadenylation occurs, formation of a HuR-C/EBP β complex controls the rate of translocation and the extent of accumulation in the cytosol. Our hypothesis suggests that this interaction leads to a controlled acquisition of the adipose phenotype by limiting the quantity of message translocated to the cytosol and available for translation. In addition, our preliminary data suggest that the process may be regulated by protein kinase C- α . We have also demonstrated that the C/EBP β mRNA remains complexed with HuR in the cytosol, consistent with a functional role in either translational control or mRNA stability (or perhaps both). With these considerations, our hypothesis is that HuR regulates the expression of C/EBP β at multiple levels, first in the nucleus by controlling polyadenylation and the amount of message reaching the cytosol and that this is a negative regulation in that formation of the complex retards messenger translocation. Second in the cytosol, formation of the HuR complex regulates translation initiation and stability of the message.

Our data will describe the role HuR plays in an early regulatory event in the adipocyte differentiation program as well as maintenance of the adipocyte phenotype. We believe that this information will demonstrate that HuR is a convenient target for regulation of adipogenesis, obesity and cellular nutrition.