

CURRICULUM VITAE

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Part I: General Information

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Place of Birth: Poughkeepsie, NY

Education:

1981 B.S. Springfield College
1983 M.S. The University of South Carolina (Exercise Physiology)
1989 Ph.D. The University of Vermont (Cell Biology)

Postdoctoral Training:

1989-1990 Research Fellow in Medicine, The University of Vermont, Department of Medicine, Burlington, VT
1990-1992 Research Fellow in Medicine, Harvard Medical School, Boston, MA
1990-1992 Research Fellow, Section on Metabolism, Elliott P. Joslin Research Laboratory, Joslin Diabetes Center, Boston, MA

Academic Appointments:

1992-1995 Instructor in Medicine, Harvard Medical School, Boston, MA
1995-2001 Assistant Professor in Medicine, Harvard Medical School, Boston, MA
2002- Associate Professor in Medicine, Harvard Medical School, Boston, MA

Other Professional Positions and Major Visiting Appointments:

1992-1993 Research Associate, Section on Metabolism, Elliott P. Joslin Research Laboratory, Joslin Diabetes Center, Boston, MA
1993-2002 Investigator, Section on Metabolism, Elliott P. Joslin Research Laboratory, Joslin Diabetes Center, Boston, MA
2000- Section Head, Section on Metabolism, Elliott P. Joslin Research Laboratory, Joslin Diabetes Center, Boston, MA
2002- Senior Investigator, Elliott P. Joslin Research Laboratory, Joslin Diabetes Center, Boston, MA

Major Committee Assignments:

1. Affiliated Institution

1994- Animal Care and Use Committee, Joslin Diabetes Center, Boston
1996-1997 Assistant Director, Enrichment Program, Joslin Diabetes Center, Boston
1997-1998 Director, Enrichment Program, Joslin Diabetes Center, Boston
1998- Chair, Animal Care and Use Committee, Joslin Diabetes Center, Boston

1998-2000 External Review Committee, Boston Obesity Nutrition Research Center
 2000- Steering Committee, Joslin DERC, Joslin Diabetes Center, Boston
 2001- Fellowship Committee, Joslin Diabetes Center, Boston
 2002-2004 Director, Transgenic Core Facility, Joslin Diabetes Center, Boston
 2004-2005 Joslin Place Design Committee, Joslin Diabetes Center, Boston
 2005- Acting Director, Joslin Diabetes Animal Facility, Boston
 2005- Research IT Steering Committee, Joslin Diabetes Center, Boston

2. National Contributions

1996 Ad Hoc Reviewer, Respiratory and Applied Physiology Study Section, National Institutes of Health
 1997 Ad Hoc Reviewer, Geriatric and Rehabilitative Medicine Study Section, National Institutes of Health
 1998 Ad Hoc Reviewer, Biological and Physiological Sciences Special Emphasis Panel, National Institutes of Health
 1998-2001 Member, Respiratory and Applied Physiology Study Section, National Institutes of Health
 2001-2002 Member, Skeletal Muscle Biology Study Section, National Institutes of Health
 1998-2000 Member, Research Grant Review Panel, American Diabetes Association
 1998- Ad Hoc Reviewer, Canadian Diabetes Association, Dutch Diabetes Association, AFM – Institut de Myologie, various NIH study sections
 2004- Member, Long Range Planning Committee for Muscle Biology and Diseases, National Institute of Arthritis and Musculoskeletal and Skin Diseases

Professional Societies:

1983- American College of Sports Medicine, Member
 1987- American Diabetes Association, Member
 1987- American Association for the Advancement of Science, Member
 1990-1991 New England Chapter-American College of Sports Medicine, Vermont State Representative
 1990 American College of Sports Medicine, Elected Fellow
 1996 American Diabetes Association and American College of Sports Medicine, Committee for Diabetes and Exercise Position Paper
 1997- American Physiological Society, Member
 1997-2000 American College of Sport Medicine, Chair, Molecular and Cellular Regulatory Mechanisms Interest Group
 2003- American Diabetes Association, Vice Chair, Exercise Council

Editorial Boards:

1997-1999 Diabetes
 1998- American Journal of Physiology: Endocrinology and Metabolism
 1999- Journal of Applied Physiology
 2002-2005 Consulting Editor, Journal of Applied Physiology
 2004- Diabetes
 2006- Biochemical Journal

Awards and Honors:

- 1981 *Magna Cum Laude* graduate, Springfield College
- 1987 Graduate-Medical Student Research Competition (2nd prize), University of Vermont College of Medicine
- 1987 Graduate Student Award For Excellence, New England Chapter, American College of Sports Medicine
- 1992 Mary K. Iacocca Fellow, Joslin Research Laboratory
- 1993 New Investigator Award, American College of Sports Medicine
- 1993 Career Development Award, American Diabetes Association
- 1994 Career Development Award, Juvenile Diabetes Foundation
- 2000 President's Lecture, American College of Sports Medicine
- 2002 Gollnick Lecture, American College of Sports Medicine
- 2002 Alumna of the Year, School of Public Health, University of South Carolina

Part II: Research, Teaching, and Clinical Contributions

A. Narrative Description of Research:

The 1996 report of the US Surgeon General states that the performance of regular physical exercise results in numerous health benefits including a reduced risk of developing type 2 diabetes. Physical exercise is also widely accepted as a clinically important modality to decrease blood glucose concentrations in patients with diabetes, due largely to an increase in the rate of glucose transport into the contracting skeletal muscles and an increase in insulin sensitivity in the period following exercise. Despite the profound clinical importance of the metabolic effects of exercise, until recently, there was little focus on understanding the underlying molecular mechanisms that mediate these responses. A major goal of the work in the Goodyear laboratory is to elucidate the mechanisms through which physical exercise increases glucose transport and insulin sensitivity in skeletal muscle. Studies in our laboratory and by other groups have shown that both exercise and insulin increase glucose transport through the translocation of the GLUT4 glucose transporter. Furthermore, we and others have suggested that the intracellular signal transduction mechanisms that lead to the stimulation of GLUT4 translocation by exercise and insulin are distinct. The mechanism responsible for this “insulin-independent” activation of glucose transport has long been elusive. In recent years we have studied the emerging role of the AMP-activated protein kinase (AMPK) as a mediator of insulin-independent glucose transport in skeletal muscle. Our studies have clearly demonstrated that pharmacologic activation of AMPK can increase glucose transport. However, AMPK is not necessary for normal activation of glucose transport by muscle contraction. Thus, in addition to AMPK, there must be other molecules involved in the regulation of exercise-stimulated glucose transport and another major focus of our work is to identify these signaling mechanisms. To determine the molecular basis for post-exercise increases in insulin action, our work is focused on elucidating novel proteins using a proteomics approach and to investigate the roles of Akt, GSK-3, and AMPK signaling in this phenomenon.

In addition to the acute effects of a single bout of exercise on muscle glucose metabolism, exercise training can lead to numerous chronic adaptations to skeletal muscle. These adaptations are fundamental for the salutary effects of increased physical activity on several human diseases including diabetes and congestive heart failure. The stimulus for these changes is thought to be initiated by each individual bout of exercise, as a single exercise session can significantly alter rates of gene transcription and protein synthesis. In working to understand how the contraction stimulus signals the transcriptional and protein synthetic processes, we have discovered that exercise robustly increases numerous protein kinases including ERK, c-jun kinase, p38 kinase, Akt, GSK-3, and AMPK. Since these molecules have been implicated in the regulation of multiple transcriptional processes, studies are underway to determine if the effects of chronic exercise to cause skeletal muscle remodeling involves the activation of these intracellular signal transduction cascades.

To address all of these questions we use a combination of molecular and physiological approaches including contraction of rodent skeletal muscles *in vitro* and *in situ*, knockout and transgenic mice, as well as our recent development of a technique to overexpress foreign proteins into adult rodent skeletal muscle using electroporation. Our discoveries using animal experimentation have provided the basis for our multiple studies investigating glucose transport regulation in the skeletal muscle of people with diabetes. All of this work should help define the molecular basis for the important adaptations that occur in skeletal muscle in response to exercise, and will have important ramifications for patients with diabetes.

B. Report of Previous Research Funding

- 1992-1993 NIH/Pilot and Feasibility PI
Expression and functional activity of skeletal muscle glucose transporter proteins in obesity.
- 1993-1997 NIH/R29 PI
Exercise and skeletal muscle signaling mechanisms.
- 1993-1994 American Diabetes Association/Career Development Award PI
Contraction-stimulated skeletal muscle glucose metabolism.
- 1993-1995 UpJohn Company/Research Award PI
Molecular mechanism of pioglitazone action in the skeletal muscle from normal and diabetic rats.
- 1993-1995 NIH/DERC Pilot and Feasibility PI
Molecular mechanisms of skeletal muscle insulin resistance.
- 1994-1997 Juvenile Diabetes Foundation/Career Development Award PI
Mechanism of contraction and insulin-stimulated skeletal muscle glucose metabolism.
- 1995-1996 Weight Watchers Foundation/Research Grant PI
Molecular mechanism of skeletal muscle insulin resistance in obesity.
- 1995-1996 Sandoz Foundation for Gerontological Research PI
Molecular mechanisms of skeletal muscle insulin resistance with aging.
- 1996-1998 Boehringer Mannheim Corporation/Research Grant Co-PI
Molecular mechanisms of glucose transport in insulin resistant human skeletal muscle.
- 1999-2002 American Diabetes Association/Research Grant PI
Regulation of skeletal muscle glucose uptake by the AMP-activated protein kinase.
- 2002-2003 Yamanouchi Foundation Award PI
Regulation of JNK and p38 MAP kinase signaling in contracting skeletal muscle.

C. Report of Current Research Activities

- 1997-2007 NIH/R01 PI
Exercise and skeletal muscle signaling mechanisms.
- 1998-2008 NIH/R01 PI
Exercise regulation of skeletal muscle glucose uptake.

C. Report of Current Research Activities (Continued):

- 2000-2008 American Diabetes Association/Fellowship Grant PI
Mentor-based post-doctoral fellowship to support one fellow in the laboratory.
- 2001-2006 NIH/R01 Investigator (Rong Tian, PI)
AMP-activated protein kinase in hypertrophied hearts.
- 2003-2005 NIH/R21 PI
RNAi Technology to Study In Vivo Muscle Metabolism
- 2004-2009 NIH/R01 PI
Exercise Regulation of Serine/Threonine Kinases

D. Report of Teaching

1. Local Contributions

University of South Carolina

1981-1983 Exercise Physiology
Laboratory Instructor
25 undergraduate students (2 sections)
10 hours/week, 300 hours/year

Joslin Diabetes Center

1994-1996 Summer Student Program Seminar Series
Organizer
15 undergraduate and medical students
20 hours/year

Harvard Medical School

1997 Integrated Human Physiology
Laboratory Instructor
140 medical students
40 hours/year

Harvard Medical School

2000, 2002 Chemistry and Biology of the Cell
Tutor
8 medical students
40 hours/year

Harvard Medical School

2003, 2004, HST Human Biochemistry and Metabolic Diseases
2005, 2006 Lecturer
40 students
10 hours/year

D. Report of Teaching (Continued)

Advising Responsibilities (Post-Graduate and Visiting Scientist)

1995-1997	Postdoctoral Fellow, Dr. Doron Aronson
1996-1999	Postdoctoral Fellow, Dr. Tatsuya Hayashi
1996-1998	Postdoctoral Fellow (Co-Mentor), Dr. John W. Kennedy
1996-1997	Visiting Scientist, Dr. Dominique Garrell
1998-1999	Postdoctoral Fellow, Dr. Jørgen Wojtaszewski
1998-1999	Postdoctoral Fellow, Dr. Yasuki Higaki
1999-2000	Visiting Scientist, Dr. Tsutomu Fukuwatari
1999-2004	Postdoctoral Fellow, Dr. Nobuharu Fujii
1999-2003	Postdoctoral Fellow, Dr. Nicholas Musi
1999-2003	Postdoctoral Fellow, Dr. William Aschenbach
2000-2002	Postdoctoral Fellow, Dr. Alison Joszi
2000-2001	Postdoctoral Fellow, Dr. Kirsten Howlett
2001-	Postdoctoral Fellow, Dr. Haiyan Yu
2001-2004	Postdoctoral Fellow, Dr. Oscar Alcazar
2002-2005	Postdoctoral Fellow, Dr. Richard Ho
2003-	Postdoctoral Fellow, Dr. Carol Ann Witczak
2003-2005	Postdoctoral Fellow, Dr. Niels Jessen
2004-	Postdoctoral Fellow, Dr. Ho-Jin Koh
2004-	Postdoctoral Fellow, Dr. Yasuko Manabe
2004-2005	Postdoctoral Fellow, Dr. Naoko Mukai
2005-	Postdoctoral Fellow, Dr. Josef Brandauer
2005-	Postdoctoral Fellow, Dr. Eric Taylor
2005-	Postdoctoral Fellow, Dr. Katja Roeckl

Advising Responsibilities (Graduate and Medical Students)

1995	Summer Medical Student, Dr. Jeffrey Markuns, St. Louis University, Project awarded first prize, AOA Medical Student Research Forum and American Diabetes Association Award at the National Student Research Forum
1996-1997	Masters Student, Ms. Lindsay Gibson, Boston University
1997	Summer Medical Student, Mr. Daniel Sherwood, George Washington University, Project awarded first prize, AOA Medical Student Research Forum
1997- 1998	Medical Student, Dr. Jeffrey Markuns, St. Louis University
1997- 2000	Doctoral Student, Dr. Marni Boppart, Boston University
1999-2003	Doctoral Student, Dr. Kei Sakamoto, Yokohama City University
2000	Summer Medical Student, Dr. Scott Dufresne, Tufts University School of Medicine
2002	Summer Doctoral Student, Ms. Daniela Rubin, The University of North Carolina
2003-	Doctoral Student, Mr. Henning Fritz Kramer, Penn State University
2004	Doctoral Student, Ms. Cristina DeAlvaro, Complutense University of Madrid
2004	Medical Student, Ms. Caroline Aalbers, University of Amsterdam

Advising Responsibilities (Undergraduate)

1997-1998	Senior Research Student, Ms. Amy Sinnet (Simmons College)
1998,1999	Summer Student, Mr. Jeremy Smith (Dartmouth College)
1998	Summer Student, Mr. Enes Efendic (Karolinska Institute)
2000-2002	Summer Student, Ms. Jennifer Garver (Yale University)
2001	Summer Student, Mr. Avi Robbins (Brown University)
2003	Summer Student, David Arnolds (Williams College)

Advising Responsibilities (Undergraduate) (Continued)

2003	Summer Student, Jocelyn Farmer (Wake Forest University)
2003	Summer Student, Erin Kane (Harvard University)
2003, 2004	Summer Student, Marc Rogers (Bucknell University)
2003	Summer Student, Jeffrey Swanson (Stanford University)
2004	Summer Student, Dhivya Kannabiran (Wellesley College)
2005	Summer Student, Whitney Ajie (Harvard University)
2005	Summer Student, Susan Darrah (University of Richmond)
2005	Summer Student, Schuyler Winstead (Middlebury College)
2005	Summer Student, Jennifer Wu (Boston College)

2. Regional, National, and International Contributions

a. Invited Presentations

- 1988 Seminar, "Regulation of Glucose Transport in Skeletal Muscle" Sandoz Research Institute, East Hanover, NJ
- 1989 Symposium, "Regulation of Contraction Induced Glucose Transport in Skeletal Muscle: Animal Models", New England Chapter American College of Sports Medicine Annual Meeting, Worcester, MA
- 1991 Symposium, "Effects of Insulin and Exercise on the Glucose Transport System in Skeletal Muscle" 14th International Diabetes Federation Congress, Satellite Symposium on Diabetes and Exercise, Burlington, VT
- 1991 Seminar, "The Glucose Transport System in Skeletal Muscle" Department of Kinesiology, University of Fukoka, Fukoka, JAPAN
- 1992 Seminar, "Cell Signaling and Glucose Transport in Skeletal Muscle" Exercise Science Department, The University of Georgia, Athens, GA
- 1993 Seminar, "Exercise and Glucose Transport" Department of Exercise Science, The Ohio State University, Columbus, OH
- 1993 Seminar, "Insulin Signaling in Intact Human Skeletal Muscle" Dipartimento di Biologia e Patologia Cellulare e Molecolare, University of Naples Medical School, Naples, ITALY
- 1993 Seminar, "Insulin Receptor Signaling in Intact Human Skeletal Muscle" Diabetes Center Seminar, School of Medicine, Department of Biochemistry, East Carolina University, Greenville, NC
- 1993 Symposium, "Rat Skeletal Muscle Intracellular Signaling: Putative Mechanisms for Exercise Stimulated Glucose Metabolism", New England American College of Sports Medicine Annual Meeting, Boxboro, MA
- 1994 Seminar, "Contraction- and Insulin-Mediated Signaling in Skeletal Muscle" Division of Diabetes and Endocrinology, Department of Medicine, Boston University Medical School, Boston, MA
- 1994 Endocrine Grand Rounds, "Contraction- and Insulin-Mediated Signaling in Skeletal Muscle: Animal and Human Models", Department of Medicine, Beth Israel Hospital, Boston, MA
- 1994 Seminar, "Intracellular Signaling Mechanisms in Skeletal Muscle" Faculte de Medecine, Institut National de la Santé et de la Rescherche Médicale (INSERM), Nice, FRANCE
- 1995 Seminar, "Regulation of Glucose Transport and Insulin Signaling in Human Skeletal Muscle", Departments of Physiology and Surgery, Karolinska Institute, Stockholm, SWEDEN
- 1995 Minisymposium, Keynote Speaker, "Effects of Exercise on Glucose Transport and Insulin Signaling", FASEB Annual Meeting, Atlanta, GA
- 1995 Seminar, "Exercise and Glucose Transport" Department of Health Sciences, Boston University, Boston, MA

Regional, National and International Contributions (Continued)

- 1995 Symposium, "Contraction- and Insulin-Mediated Signaling in Skeletal Muscle", American College of Sports Medicine Annual Meeting, Minneapolis, MN
- 1995 Symposium, "The Making of Today's Scientist: Perspectives From Mentors, New Investigators and Search Committee Chairs", American College of Sports Medicine Annual Meeting, Minneapolis, MN
- 1995 Symposium, "Exercise, Diabetes and Skeletal Muscle Glucose Transport" Medisense/Joslin Diabetes Center Conference on Diabetes and Exercise, Harvard Medical School, Boston, MA
- 1996 Seminar, "Effects of Insulin and Exercise on Intracellular Signaling Mechanisms in Skeletal Muscle" Division of Cell Biology, Hospital for Sick Children, and Department of Physiology, University of Toronto, Toronto, CANADA
- 1996 Seminar, "Exercise and Glucose Transport" Department of Exercise Science, Springfield College, Springfield, MA
- 1996 Symposium, "In Vitro Studies of Human Muscle - Studies in Insulin Resistant Subjects", European Concerted Action, Working Group on Insulin Signaling in Muscle, Cambridge, UK
- 1996 Symposium, "Physical Activity and Insulin Action" Symposium, American Diabetes Association Annual Meeting Symposium, San Francisco, CA
- 1996 Seminar, "Intracellular Signaling Mechanisms in Skeletal Muscle" Department of Medicine, Yale Medical School, New Haven, CT
- 1996 Symposium, "Cellular Basis of Contraction-Stimulated Glucose Transport: Comparison with Insulin Action", American Physiological Society, Vancouver, CANADA
- 1997 Seminar, "Intracellular Signaling Mechanisms in Contracting Skeletal Muscle", The John B. Pierce Laboratory and Yale Medical School, New Haven, CT
- 1997 Symposium, "Glut4 Translocation: Effects of Insulin and Exercise", American College of Sports Medicine Annual Meeting, Denver, CO
- 1997 Symposium, "Studies of Glucose Transporter Physiology in Human Skeletal Muscle", FASEB Conference on Glucose Transporter Biology, Copper Mountain, CO
- 1997 Symposium, "Signal Transduction in Skeletal Muscle", 10th International Conference on the Biochemistry of Exercise, Sydney, AUSTRALIA
- 1997 Special Topic Lecture, "Exercise, Glucose Transport, and Intracellular Signaling Mechanisms in Human Skeletal Muscle", New England Chapter American College of Sports Medicine Annual Meeting, Providence, RI
- 1997 Symposium, "Exercise Regulation of Glucose Transport in Skeletal Muscle", Nagano Symposium on Sports Science for the Winter Olympic Games '98, Matsumoto, JAPAN
- 1997 Symposium, "Molecular Mechanisms Involved in GLUT4 Translocation in Muscle During Insulin and Contraction Stimulation", Conference of the Copenhagen Muscle Research Center, Copenhagen, DENMARK
- 1997 Seminar, "Exercise, Glucose Transport, and Intracellular Signaling Mechanisms in Skeletal Muscle" Department of Physiology, University of Laval, Quebec, CANADA
- 1998 Seminar, "Exercise Regulation of Intracellular Signaling and Glucose Transport in Skeletal Muscle" Department of Exercise Science, University of Massachusetts, Amherst, MA
- 1998 Seminar, "Exercise and Glucose Transport" Department of Applied Physiology, Boston University, Boston, MA
- 1998 Seminar, "Intracellular Signaling In Contracting Skeletal Muscle" Department of Pharmacology, Emory University, Atlanta, GA
- 1999 Seminar, "Regulation of Glucose Transport in Skeletal Muscle" Pennington Biomedical Research Center, Louisiana State University, Baton Rouge, LA
- 1998 Seminar, "Cellular Basis of Contraction-Stimulated Glucose Transport: Comparison with Insulin Action" Central Research Division, Pfizer Inc., Groton, CT

Regional, National and International Contributions (Continued)

- 1998 Seminar, "Glucose Transport Regulation by Exercise" Quaker Oats Research and Development, Barrington, IL
- 1998 Symposium, "Exercise Stimulated Signaling Pathways in Skeletal Muscle: Regulation of Metabolic Responses or Gene Transcription?", American College of Sport Medicine Annual Meeting, Orlando, FL
- 1998 Symposium, "Exercise Regulation of the MAP Kinase Signaling Pathways in Rodent and Human Skeletal Muscle", European College of Sports Science Annual Congress, Manchester, UK
- 1998 Seminar, "Contraction-Stimulated Glucose Uptake in Skeletal Muscle: An Insulin-Independent Stimulus for GLUT4 Translocation" Abbott Laboratories, Abbott Park, IL
- 1998 Seminar, "Contraction-Stimulated Glucose Uptake in Skeletal Muscle: An Insulin-Independent Stimulus for GLUT4 Translocation" Merck Research Laboratories, Rahway, NJ
- 1998 Seminar, "Intracellular Signaling in Contracting Skeletal Muscle" Department of Physiology and Biophysics, University of California at Irvine, Irvine, CA
- 1998 Seminar, "Cellular Basis of Contraction-Stimulated Glucose Transport: Comparison with Insulin Action" Department of Medicine, Washington University, St. Louis, MO
- 1998 Seminar, "Insulin-Independent Mechanisms for Stimulating Glucose Uptake in Skeletal Muscle" Metabolex, Inc., Hayward, CA
- 1999 Seminar, "Signaling Mechanisms in Contracting Skeletal Muscle" Department of Biological Sciences, University of California, Davis, CA
- 1999 Symposium, "Intracellular Signaling Mechanisms Leading to Exercise-Stimulated Glucose Transport in Skeletal Muscle", Experimental Biology '99, Washington, DC
- 1999 Seminar, "Intracellular Signaling Mechanisms Regulating Glucose Uptake and Glycogen Metabolism in Contracting Skeletal Muscle", Department of Biochemistry and Molecular Biology, Indiana University School of Medicine, Indianapolis, IN
- 1999 Tutorial Lecture, "Exercise Regulation of Intracellular Signaling Pathways in Skeletal Muscle", American College of Sports Medicine Annual Meeting, Seattle, WA
- 1999 Symposium, "Signals Elicited by Exercise to Mobilize GLUTs", FASEB Summer Conference on Glucose Transporter Biology, Snowmass, CO
- 1999 Symposium, "AMP Kinase and Glucose Transport: Studies in Rat and Human Skeletal Muscle" The 5th Karolinska-Mayo Clinic Conference on Metabolism and Nutrition, Stockholm
- 1999 Seminar, "Signaling Mechanisms Regulating Glucose Transport in Skeletal Muscle", Copenhagen Muscle Research Center, Copenhagen, DENMARK
- 1999 Seminar, "Intracellular Signaling Mechanisms Regulating Glucose Uptake in Contracting Skeletal Muscle", Dalton Cardiovascular Research Center, University of Missouri, Columbia, MO
- 2000 Seminar, "Signaling Mechanisms in Contracting Skeletal Muscle", Department of Cellular and Molecular Physiology, The Pennsylvania State University College of Medicine, Hershey, PA
- 2000 Symposium, "Molecular Basis for the Ability of Exercise to Activate Glucose Metabolism in Insulin Resistant Skeletal Muscle" Keystone Symposia on Diabetes Mellitus and Molecular Control of Adipogenesis and Obesity, Taos, NM
- 2000 Seminar, "The MAP Kinases and AMP Kinase: Signals Mediating Glucose Metabolism in Skeletal Muscle?", Department of Physiology, UT Southwestern Medical Center, Dallas, TX
- 2000 Seminar, "Regulation of Glucose Transport in Contracting Skeletal Muscle", Department of Nutrition, Columbia University College of Physicians and Surgeons, New York, NY
- 2000 Endocrine Grand Rounds, "Glucose Transport in Skeletal Muscle: Why Exercise Works When Insulin Does Not in Diabetes", Brigham and Women's Hospital, Boston, MA

Regional, National and International Contributions (Continued)

- 2000 Symposium, "Signal Transduction and Glucose Transport" 11th International Conference on the Biochemistry of Exercise, Little Rock, AR
- 2000 President's Lecture, "Diabetes: Why Exercise Works When Insulin Does Not", American College of Sports Medicine Annual Meeting, Indianapolis, IN
- 2000 Symposium, "AMP-activated Protein Kinase: A Critical Signaling Intermediary for Insulin-Independent Glucose Transport in Skeletal Muscle?" Gordon Research Conference on Second Messengers and Protein Phosphorylation, Meriden, NH
- 2001 Seminar, "AMP-activated Protein Kinase: A Critical Signaling Intermediary for Insulin-Independent Glucose Metabolism" Adipose & Metabolic Tissue Study Group, Boston Obesity Nutrition Research Center, Boston, MA
- 2002 Seminar, "Exercise Regulation of Glucose Transport in Skeletal Muscle", Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, MA
- 2002 Seminar, "Insulin-Independent Mechanisms for Stimulating Glucose Uptake in Skeletal", Bristol-Myers Squibb Pharmaceutical Research Institute, Princeton, NJ
- 2002 Symposium, "AMP Kinase: "A Master Metabolic Switch", Biochemical Pharmacology Discussion Group, New York Academy of Sciences, New York, NY
- 2002 Gollnick Lecture, "Exercise-Mediated Regulation of Glucose Transport and Metabolic Signaling Cascades in Skeletal Muscle: Who Will Be the MVP?", St. Louis, MO
- 2002 Symposium, "Exercise Regulation of Skeletal Muscle Carbohydrate Metabolism by Glycogen Synthase Kinase-3", American College of Sports Medicine Annual Meeting, St. Louis, MO
- 2002 Symposium, "The Role of AMP Kinase in Exercise on Substrate Metabolism", American Diabetes Association 62nd Scientific Sessions, San Francisco, CA
- 2002 Symposium, "AMP Activated Protein Kinase and NO in Glucose Transport in Contracting Muscle", Acta Scandinavia International Symposium: Signaling in Muscle Metabolism, Copenhagen, Denmark
- 2002 Symposium, "Regulation of AMP Kinase in Skeletal Muscle", AMPK 2002: The 2nd International Symposium on AMP-Activated Protein Kinase, Dundee, Scotland, UK
- 2002 Seminar, "Akt and GSK-3 Signaling in Contracting Skeletal Muscle", MRC Protein Phosphorylation Unit, University of Dundee, Dundee, Scotland, UK
- 2002 Seminar, "Regulation of Glucose Transport and Glycogen Metabolism by the AMP-Activated Protein Kinase", Merck & Co., Inc., Rahway, NJ
- 2002 Seminar, "Regulation of Glucose Transport in Skeletal Muscle by the AMP-Activated Protein Kinase", Abbott Laboratories, Metabolic Disease Research, Abbott Park, IL
- 2002 Seminar, "Glucose Transport Regulation in Contracting Skeletal Muscle", Biology Department Williams College, Williamstown, MA
- 2002 Symposium, NIDDK Symposia on The Interaction of Physical Activity and Nutrition: Biological Remodeling and Plasticity, Washington, D.C.
- 2003 Seminar, "Regulation of Skeletal Muscle Glucose Uptake and Insulin Sensitivity: AMP Kinase and Beyond", Endocrinology Division, Internal Medicine Department, University of Texas Medical Branch, Galveston, Texas
- 2003 Seminar, "Intracellular Signaling Mechanisms in Contracting Skeletal Muscle", Department of Physiology & Biophysics, Case Western Reserve University, Cleveland, OH
- 2003 Seminar, "Exercise Regulation of Glucose Uptake and Insulin Sensitivity in Skeletal Muscle", Biomedical Engineering Seminar, Department of Physiology and Biophysics, Mayo Clinic, Rochester, MN
- 2003 Seminar, "Exercise Regulation of Skeletal Muscle Glucose Transport", Department of Exercise Science, University of Massachusetts, Amherst, MA
- 2003 Seminar, "Regulation of Glucose Transport by the AMP-Activated Protein Kinase", Elixir Pharmaceuticals, Inc., Cambridge, MA

Regional, National and International Contributions (Continued)

- 2003 Symposium, "Exercise and Glucose Transport", FASEB Summer Research Conference on Glucose Transport Biology, Snowmass Village, CO
- 2003 Symposium, "Regulation of Glucose Transport by AMP Kinase", North American Society for the Study of Obesity, Ft. Lauderdale, FL
- 2003 Symposium, "AMP and AMP Kinase", American Heart Association Scientific Sessions 2003, Orlando, FL
- 2003 Seminar, "AMP Kinase: A Master Metabolic Switch in Skeletal Muscle", Endocrine Grand Rounds, Brigham and Women's Hospital and Children's Hospital, Boston, MA
- 2004 State of the Art Lecture, "AMP Kinase in the Regulation of Muscle Metabolism", American Diabetes Association Annual Meeting, Orlando, FL
- 2004 Seminar, "Signal Transduction Research: Promising Avenues for Diabetes and Obesity Therapies", Philadelphia, PA
- 2004 Seminar, "Insulin Signaling 1", Baltic Summer School, Malmo, Sweden
- 2004 Seminar, "AMP Kinase in Fat and Skeletal Muscle", Division of Endocrinology University of Texas, San Antonio, TX
- 2004 Seminar, "AMP Kinase as a Regulator of Skeletal Muscle Glucose Transport", APS Intersociety Meeting, Austin, TX
- 2004 Seminar, "AMP Kinase: A Key Regulator of Glucose Transport in Skeletal Muscle?", Endocrinology and Metabolism Research, University of Pittsburgh, Pittsburgh, PA
- 2005 Keynote Speaker, "Signaling in Skeletal Muscle: Can You Hear Me Now?", Southeast American College of Sports Meeting, Charlotte, NC
- 2005 Seminar, "How Does Exercise Increase Skeletal Muscle Glucose Uptake? Implications for Diabetes Prevention and Treatment", Department of Exercise Science Seminar Series, University Of South Carolina, Columbia, SC
- 2005 Symposium, "Glucose Transport in Skeletal Muscle", FASEB Summer Research Conference, Snowmass Village, CO
- 2005 Seminar, LKB1 and AMP Kinase: Master Regulators of Cellular Metabolism", Department of Medicine and Biochemistry, University of South Florida, Tampa, FL
- 2006 Co-organizer, FASEB Summer Research Conference, "AMPK: Impact on Mammalian Metabolism and Disease, Snowmass Village, CO

b. Advising Responsibilities

- 1994 External Dissertation Examiner
University of Waterloo, Canada
1 doctoral candidate
- 1996 External Dissertation Examiner
University of Toronto, Canada
1 doctoral candidate
- 2000 External Dissertation Examiner
University of Massachusetts Medical School, Worcester, MA
1 doctoral candidate
- 2005 External Dissertation Examiner
University of Massachusetts Medical School, Worcester, MA
1 doctoral candidate

2006 External Dissertation Examiner
Boston University School of Medicine, Boston, MA
1 doctoral candidate

Part III: Bibliography

Original Reports:

1. Ivy JL, Miller W, Dover EV, **Goodyear LJ**, Sherman WM, Farrel S. Endurance improved by ingestion of a glucose polymer supplement. *Med. Sci. Sports Exerc.* 1983;15(6):466-471
2. **Goodyear LJ**, Fronsoe MD, VanHouten DR, Dover EV, Durstine JL. Large increase in HDL cholesterol concentrations following progressive endurance training in female runners. *Annals of Sports Med.* 1986;3:33-38
3. **Goodyear LJ**, Hirshman MF, Knutson SM, Horton ED, Horton ES. Effect of exercise training on glucose homeostasis in normal and insulin-deficient diabetic rats. *J. Appl. Physiol.* 1988;65(2):844-851
4. Hirshman MF, Wardzala LJ, **Goodyear LJ**, Fuller SM, Horton ED, Horton ES. Exercise training increases the number of glucose transporters in rat adipose cells. *Am. J. Physiol.* 1989;257(*Endocrinol. Metab.* 20):E520-E530
5. Hirshman MF, **Goodyear LJ**, Wardzala LJ, Horton ED, Horton ES. Identification of an intracellular pool of glucose transporters from basal and insulin-stimulated rat skeletal muscle. *J. Biol. Chem.* 1990;265:987-991
6. **Goodyear LJ**, Hirshman MF, King PA, Thompson C, Horton ED, Horton ES. Skeletal muscle plasma membrane glucose transport and glucose transporters after exercise. *J. Appl. Physiol.* 1990;68(1):193-198
7. **Goodyear LJ**, King PA, Hirshman MF, Thompson CM, Horton ED, Horton ES. Muscle contractions increase plasma membrane glucose transporter number in the absence of insulin. *Am. J. Physiol.* 1990;258(*Endocrinol. Metab.* 21):E667-E672
8. **Goodyear LJ**, VanHouten DR, Fronsoe MD, Dover EV, Rocchio ML, Durstine JL. Immediate and delayed effects of marathon running on plasma lipid and lipoprotein concentrations. *Med. Sci. Sports Exerc.* 1990;22(5):588-592
9. **Goodyear LJ**, Hirshman MF, Horton ED, Knutson SM, Wardzala LJ, Horton ES. Exercise training normalizes glucose metabolism in a rat model of impaired glucose tolerance. *Metabolism* 1991;40(5):455-464
10. Delissio M, **Goodyear LJ**, Fuller S, Devlin JT. Effects of moderate-intensity endurance exercise on fuel metabolism in hepatic cirrhosis. *J. Appl. Physiol.* 1991;70(1):210-215
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