

CURRICULUM VITAE
Christiaan Leeuwenburgh

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Education-degrees-employment

- Chief, Division of Career Development, Mentoring and Education, Genomics and Biomarkers Core of the University of Florida Institute on Aging 2005-
- Associate Professor, College of Medicine, Department of Aging and Geriatric Research 2005-
- University of Florida, Gainesville, FL 2002-2005
Associate Professor & Director Biochemistry of Aging Laboratory
- University of Florida, Gainesville, FL 1998-2002
Assistant Professor & Director, Biochemistry of Aging Laboratory
- Faculty Associate of the Institute on Aging and Center for Gerontological Studies 1998-
- Washington University School of Medicine, St. Louise, Internal Medicine 1995-1998
Division of Geriatrics and Gerontology and Division of Atherosclerosis, Nutrition and Lipid Research
Post-Doctoral Fellow in Internal Medicine & Geriatrics and Gerontology; Research Associate in Medicine; Adjunct Instructor; Mentors: John O. Holloszy, MD & Jay W. Heinecke, MD.
- Honorary Fellow & Pre-doctoral Fellow American Heart Association 1993-1995
University of Wisconsin, Madison, WI Honorary Post-Doctoral Fellow
Biodynamics Laboratory, Mentor Li Li Ji, PhD.
- PhD, University of Illinois, Urbana-Champaign, IL 1990-1995
Mentor: Li Li Ji, PhD.
- University of Florida, BS (1988) and MS (1990) 1986-1990

Current post-doctoral associates

2004-, Stephanie Wohlgemuth (PhD, Zoophysiology, Germany) (Permanent Resident)
2004-, Tim Hofer (PhD, Analytical Toxicology, Sweden)

Current doctoral and masters students

Asimina Hiona, Doctoral Student (2001-) Greece
Arnold Young Seo, Master Student (2004) USA and S. Korea

Current undergraduate students

Rizwan Kalani (Biochemistry and Mathematics) University Scholar 2004-2005 and and 2005-2006 University Scholar, USA
Toscano, Kristin (Microbiology and Cell Science), USA
Shashank Upadhyay (Biology), USA

Joaquin Antonio Bestard (Bio-Engineering), USA

Post-doctoral students trained and current positions

1999-2000, Pattie Green, (PhD), Post-doc, Washington University School of Medicine, St. Louis; Instructor, Washington University, Adjunct Scientist, Seattle
2001-2002, Rajani Shelke (PhD; India), Post-Doc: Molecular Neurogenetics, Harvard University, Massachusetts General Hospital, Research Fellow, Molecular Neurogenetics Unit.
2002-2003, Colin Selman (PhD in Zoology; Scotland); Instructor; Department of Metabolic Medicine, Imperial College Faculty of Medicine, London; Centre for Diabetes, Endocrinology and Metabolism, Rayne Institute, University College London,
2002-2004, Suma Kendaiah, Emory, Atlanta
2001-2004, Barry Drew, (PhD Chemistry, USA), Analytical Scientist, JRH Biosciences, Lenexa, Kansas

Graduate students trained and current positions

(1998-2004) Sharon Phaneuf (PhD), Post-Doc, Boston University School of Medicine, Myocardial Biology Unit.
(2000-2004) Tracey Phillips (PhD), Medical School, Liverpool, UK
1998-2002, Amie Dirks (PhD) Post-Doc, Radiation Oncology, Stanford University, Assistant Professor, Wingate University School of Pharmacy.
1999-2001, April Childs, (MS), PhD Program, Department of Cellular and Molecular Biology University of Arizona
1998-1999, Jared Wilsey, PhD Program, University of Florida Medical School
2001-2002, Neeharika Choudry (MS), Residency, Medical School Chicago
2002-2003, Dore DeBartelo (MS) Osteopathic Medicine
2002-2004, Jason Maslow (MS) Physician Assistant, North Carolina
2001-2003, Youngmok Jang, (MS), PhD program San Antonio Medical School.

Undergraduates and current positions

Michael Pollack, University Scholar, Ph.D. Program, Pharmacology Program, University of Pennsylvania
Michelle Williams, Ph.D. Pharmacology Program, University of Pennsylvania
Renee Claxton, University of Florida Medical School
Katherine Welch, University of Florida Medical School
Nam-Phuong Nguyen, University of Florida Medical School
Jill Goldstein, (Outstanding Female Leadership Award 2000 at the University of Florida)
Sarah Adams, University Scholar, (Outstanding Female Leadership Award 2000 at the University of Florida)
Rosanna Guerrero, University of Miami Medical School
Manish Patel, University of Miami Medical School
Richard Mattison, Medical School, Norfolk, VA
Sabrina Simcox, Physical Therapy, Washington University School of Medicine
Kie Lee, Pre-Med (Intern from Northwestern University, Chicago), Med School Applicant
Alap A. Shah, Pre-Med (Intern from Harvard University), Med School Applicant
Shannon Swant, Physician Assistant, Boston U.
Swati Patel, Pre-Med
Seema Qaiyumi (Medical School, North Carolina)
Hong Vo (Pre-med), Med School Applicant

Short-term International scholars

2005 (Summer) Alberto Sanz Montero, Universidad Complutense, Department of Biology, Madrid, Spain, Mitochondrial DNA damage and oxidant production with age.
2005; Evelyn Kouwenhoven, Opleiding Biologie en Medisch, Laboratoriumonderzoek aan Avans Hogeschool, Faculteit Techniek en Natuur, Afdeling Life Science, Breda, Netherlands.
2004 (Summer) Mercedes Prudencio-Alvarez, Faculty of Science, University of Extremadura. Badajoz, Spain

2002 and 2003 (Summer) Ricardo Gredilla, Universidad Complutense, Department of Biology, Madrid, Spain, Mitochondrial DNA damage and oxidant production with age.

2003; Laurie Lanier; France; Chemical Engineering student, specializing in Biotechnology and in Chemical Engineering Processes in the Department of Chemical Engineering at the University of Applied Sciences in Münster, Germany. Diplome Universitaire de Technologie DUT in Chemistry from the University of Grenoble in France.

National and International collaborations

- Thomas Prolla, Associate Professor, University of Wisconsin-Madison, Departments of Genetics & Medical Genetics.
- Esther E. Dupont-Versteegden, PhD, University of Arkansas, Assistant Professor Geriatrics, and Physiology and Biophysics Institute on Aging, Apoptosis, muscle atrophy and aging
- Tory Hagen, Linus Pauling Institute, Oregon State University, Mitochondria and aging
- Professor Gustavo Barja, Universidad Complutense, Department of Biology, Madrid, Spain, Mitochondrial DNA damage and oxidant production with age
- Dr. Angela Lezza and Professor Nicola Maria Gadaleta, University of Bari, Bari, Italy. Mitochondrial Deletions in Skeletal muscle with Age
- Professor Tilman Grune. Research Institute for Environmental Medicine at the Heinrich Heine University Dusseldorf Molecular Aging Research, Auf'm Hennekamp 50 40225, Dusseldorf, Germany. Proteasome function and protein aggregation with age
- Prof. John Speakman, Aberdeen University, U.K. and Dr. Selman (former post-doc in our Laboratory) Effects of age and calorie restriction on daily energy expenditure using the doubly labeled water technique
- Hae Young Chung Ph.D., Dean College of Pharmacy, Pusan National University, Pusan South Korea. Inflammation Biology Aging and Disease

Currently active collaborations at the University of Florida

- Chris Baylis, Director, UF Hypertension Center.
- Bill Dunn, Anatomy and Cell Biology
- Shalesh Kaushal, Department of Ophthalmology, Director UF Eye Center
- David Julian, Assistant Professor, Zoology
- T.J. Wronski, Departments of Physiological Sciences
- Phil Scarpace and Nihal Tumer, Pharmacology & Therapeutics

Patent

Patent No: US 6,541,265 B2; Date of Patent Apr. 1, 2003. "Method and system to test a substance for inflammatory or oxidant properties". Inventor: Christiaan Leeuwenburgh. Assignee: University of Florida, Gainesville, FL (US); Application No. 09/852,194; Filed May 9, 2001.

Grants and contract

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| 1RO1 AG 21042 NIH, (Leeuwenburgh) | 8/01//2003-7/31/2008 |
| National Institute of Health/National Institute of Aging | \$1,701,106 |
| Apoptosis and life-long caloric restriction | |
| Goal: To determine the mechanisms of cell death with age and the effects of caloric restriction. | |
| 1RO1 AG 17994 NIH, (Leeuwenburgh) | 8/01/2000-7/31/2005 |
| National Institute of Health/National Institute of Aging | \$1,418,560 |
| Molecular Mechanisms of Oxidative Stress in Aging Muscle | |
| Goal: The major goal for this project is to understand the role of mitochondria as the cause for sarcopenia and cardiovascular disease. | |

Co-Investigator

T32 HD043730 NIH (**Krista Vandenborne**) 7/01/2003-6/30/2008
 Training in Rehabilitation and Neuromuscular Plasticity \$938,667

Goal: This training program in rehabilitation and neuromuscular plasticity will provide the interdisciplinary environment that is fundamental to the advancement of rehabilitation research and will prepare trainees for translation research in neuromuscular plasticity.

RO1 HL62361 (Powers) 2/1/2001-1/31/2005
 NIH-National Heart, Lung and Blood Institute \$1,268,750

Mechanical ventilation and respiratory muscles

Goal: The major goal for this project is to discover the mechanisms of respiratory fatigue in the diaphragm during mechanical ventilation.

RO1 HL067855 (Powers) 7/1/2003-6/30/2007
 NIH-Heart, Lung and Blood Institute \$1,317,512.00

Exercise, antioxidants, and I-R injury

Goal: To determine the mechanisms of exercise-induced cardiac protection.

Fellowships:

AHA Reference Number: 0415166B, 7/1/2004-6/30/2006
 Asimina Hiona, percentile rank: 13.89% \$40,000

The use of p66Shc knockout mice to investigate the mechanisms responsible for cardiomyocyte apoptosis with age

Other grants/support role

The National Institute on Aging: **Intervention testing program for compounds to test for anti-aging activity in mice:** (Awarded to **Leeuwenburgh**; study performed by the NIA). Study short-term and long-term **aspirin** intervention to prevent disease and to prolong life in rodents. Study on rodents performed by the National Institute on Aging. Analysis to be performed by the Biochemistry of Aging Laboratory.

KO1 AG025194 NIH Award to Stacey Beske, University of Colorado, Co-mentor/Leeuwenburgh
 "Aging, Abdominal Obesity & FMD: Translational Physiology" 02/01/05-01/31/10
 \$110,826 Direct Cost, \$119,692 Total Cost/year for 5 years total direct \$598,460

KO1 AR050146 NIH Award to Erin Alice Dannecker, University of Missouri-Columbia, Co-mentor/Leeuwenburgh
 (PI: Dannecker) 9/1/2004 - 8/31/2009
 NIAMS total direct \$625,855
 Measures and Mechanisms of Muscle Pain in Humans

The major goals of this MRSDA application are to examine the relationships among (a) muscle pain magnitude, inflammation, central sensitization, and altered temporal summation and (b) muscle pain magnitude and neuromuscular function.

Pending:

1RO1 AG 17994-6 NIH, Renewal (Leeuwenburgh) 8/01/2005-7/31/2010
 National Institute of Health/National Institute of Aging \$1,777,560
 Molecular Mechanisms of Oxidative Stress in Aging Muscle

Goal: The major goal for this project is to understand the role of mitochondria as the cause for sarcopenia and cardiovascular disease.

National Institute of Health (**Leeuwenburgh**) 2005-2010
 Mitochondrial mutations, apoptosis and p66sch.

To better understand the role of apoptosis and mitochondrial deletions in heart and skeletal muscle we have created a mutator mice (Pol-G) and p66sch deficient mice. Pol-G mice show signs of accelerated aging. p66sch deficient mice show an extended life-span. This grant is in collaboration with the University of Wisconsin and will study the effects of mitochondrial gene mutations on oxidative stress and apoptosis in skeletal and heart muscle.

National Institutes of Health (**Powers**). (NHLBI-R01) (2005-2010)
 Mechanical ventilation and oxidative stress in the diaphragm (\$1,600,512)

Agency: Florida Department of Health 6/1/2005 - 5/31/2007
 Smoking as a Novel Risk Factor for Progression of Renal Disease.
 Total budget: \$499,121; Indirect costs: \$23,768
 Project 4: \$69,815 Direct and \$3,491 Indirect 10%

National Athletic Trainers Association (**Borsa**) 2005-2007
 Low-level laser therapy to treat musculoskeletal pain and dysfunction
 Total cost: \$124,191.00 - (107,992 direct, 16,199 indirect) 5%

Pilot data collected and grant application in progress.

National Institute of Health (**Leeuwenburgh**) 2005-2010
 Inflammation response, oxidative stress, and cell injury in humans; Effects of aspirin and NSAID.

Goal: This grant proposes to investigate the effects of aspirin and NSAID on cytokines (both pro-inflammatory and anti-inflammatory cytokines), oxidative stress, and cell injury in healthy male and female subjects.

Previous grants (Direct and Indirect Cost)

Florida Department of Health: Biomedical Research Program (**Powers**) 2001-2003
 Exercise and myocardial protection against I-R injury \$355,525
Goal: To determine the mechanisms of exercise-induced cardiac protection.

American Heart Association (Florida) Scientist Development Grant AHA 0030334B (**Leeuwenburgh**).
 6/1/2000-5/31/2003 \$225,000

Doxorubicin-induced oxidative stress and apoptosis in cardiac myocytes: The role of the mitochondria.
Goals: The major goal of this project is to determine by what *in vivo* mechanisms doxorubicin effect myocyte apoptosis.

Galileo-IRB 658-2000 (**Leeuwenburgh**) 2001-2002
 Galileo Laboratories \$123,750

A Single Center Double Blind Placebo Controlled Study of Nutritional Ingredient Systems in Post-Exercise Muscle Injury to Assess Symptomatic Response and Surrogate Markers of Oxidative Stress and Inflammation
Goals: The major goals for this project are to determine 1) if nutritional supplements attenuate inflammation, cell damage, and oxidative stress in healthy human subjects 2) safety of supplements.

NIA, AG 10485 (**Meyer**) 8/01/1999-7/31/2004
 Program Project Grant National Institute of Health \$5,217,615
 Discovery of novel drugs for Alzheimer's disease.
 Co-Investigator Neurochemistry Core (**Leeuwenburgh**)

Goal: The major goal for this project is to discover novel drugs and drug mechanisms that are of potential efficacy in the treatment of the neurodegeneration associated with Alzheimer's disease.

Society of Geriatric Cardiology, Merck Geriatric Cardiology Research Award (**Leeuwenburgh**) 1999-2000
 Myocardial Aging: Mitochondrial Control of Apoptosis?
 Cause for Ventricular Dysfunction and Failure in the Old Heart? \$10,000

American Heart Association-Florida affiliate (**Powers**) 1998-2001
 Protective strategies against myocardial ischemia-reperfusion injury \$109,388
 Washington University School of Medicine

NIH-NIA, 1 P60 AG 1362901 Claude Pepper OAIC (**Holloszy**) 1995-2000
 Pilot Project Principal Investigator (**Leeuwenburgh**) \$4,097,399

0415187B; AHA Reference Number: (Fellowship for **Young Mok Jang**) 2004
 Sarcoplasmic Reticulum Mediated Apoptosis in Cardiotoxicity \$40,000
 induced by Doxorubicin in vitro and in vivo

0225194B, American Heart Association (Fellowship for **Barry Drew**) \$72,000
 Doxorubicin-induced damage to cardiac mitochondrial enzymes 2002-2004
Goal: Attenuating doxorubicin-induced damage to cardiac mitochondrial enzymes.

0215053B, American Heart Association (Fellowship for **Sharon Phaneuf**) \$38,000
 Lifelong, voluntary exercise as a strategy to prevent mitochondrial-mediated cardiomyocyte 2002-2004
 apoptosis with age.
Goal: Attenuating apoptosis in the heart with life-long moderate exercise training.

National Institute of Aging; **National Research Service Award (Leeuwenburgh)** 1997-1998
 NIA, NRSA; 1F32AG05780-01, Molecular Mechanism of Oxidative Stress in Aging \$25,420/yr

Pre-Doctoral **Fellowship** AHA SS-08, American Heart Association, Illinois Affiliate 1993-1995
 Myocardial Ischemia-Reperfusion Injury *in vivo* (**Leeuwenburgh**) \$24,000

Honors and awards

Nathan W. Shock Award, National Institute on Aging, 2004
 University of Florida Research Foundation Professor Award 2004-2005
 American Heart Association Young Investigator Award, FL 2000
 Merck Geriatric Cardiology Research Award, Society of Geriatric Cardiology 1999-2000
 Young Investigator Award, Oxygen Society, Intern. Soc. Free Rad. Res., Miami, FL 1996
 Honorary Fellow, University of Wisconsin, Madison, WI 1993-1995
 Academic-Athletic Avery Brundage Award, University of Illinois, IL 1991-94
 Presidents Honor Roll University of Illinois, Urbana-Champaign, IL 1990
 Presidents Honor Roll, University of Florida, Gainesville, FL 1988

Professional societies

The American Physiological Society 1997-Present
 American Aging Association 2003-Present
 Gerontological Society of America 2003-Present
 Society for Free Radical Biology and Medicine 1995-Present
 International Society for Free Radical Research 1995-Present
 American College of Sport Medicine (FACSM) 1993-Present

Editorial board

Journal of the American Aging Association (AGE) 2004-2006
 Journal of Experimental Gerontology 2005-2007

Teaching

University of Florida	1998-2003
Biochemistry of Aging and Disease (Graduate and Fellows)	
Physiology (Undergraduate)	
Applied Physiology (Undergraduate)	
Washington University School of Medicine at St. Louis	1997
Molecular Cell Biology (Graduate and Fellows)	
University of Wisconsin	1994
Biological Factors 614 (Undergraduate)	

Journal Referee*Biochemistry*

Journal of Biological Chemistry
 Journal of Clinical Investigation
 Archives of Biochemistry and Biophysics
 Biochemica et Biophysica Acta
 Journal of Nutritional Biochemistry
 The International Journal of Biochemistry & Cell Biology

Free Radical Biology

Free Radical Biology and Medicine
 Free Radical Research

Aging, Disease, Life Sciences

FASEB Journal
 FEBS Letters
 Journal of Gerontology
 Experimental Gerontology
 Mechanisms of Aging and Development
 Oncogene
 Life Sciences

Physiology and Applied Physiology

Journal of Applied Physiology
 American Journal of Physiology
 American Journal of Physiology Cell Physiology
 American Journal of Physiology Endocrinology and Metabolism
 American Journal of Physiology Heart and Circulatory Physiology
 American Journal of Physiology Regulatory, Integrative and Comparative Physiology
 Acta Physiologica Scandinavica
 Canadian Journal of Applied Physiology
 European Journal of Applied Physiology
 Medicine and Science in Sports and Exercise
 Physiology and Behavior
 High Altitude Medicine and Biology
 International Journal of Sports Medicine
 European Respiratory Journal

Advisory boards, study section or research committee

2000-2004, American Heart Association, Peer Review Committee (Florida)
 2002-2003, Research Committee Society of Geriatric Cardiology
 2002-2003; GET LINK Advisory Board Member, University of Indiana. Lesa Lorenzen Huber, PhD
 Web based Gerontology Education
 2002-2003; Research Committee Society of Geriatric Cardiology
 2003-, NIA Program Project Grants, Special Emphasis Panel/Scientific Review Group 2003/05 ZAG1 ZIJ-5
 2004-, NIA Special Emphasis Panel/Scientific Review Group
 2005-, NIA Program Project Grants, Special Emphasis Panel/Scientific Review Group 2005/05 ZAG1 ZIJ-5

Publications. (1-61)

1. Selsby, J.T., Judge, A.R., Yimlamai, T., Leeuwenburgh, C., and Dodd, S.L. 2005. Life long calorie restriction increases heat shock proteins and proteasome activity in soleus muscles of Fisher 344 rats. *Exp Gerontol* 40:37-42.
2. Phillips, T., and Leeuwenburgh, C. 2005. Muscle fiber-specific apoptosis and TNF-alpha signaling in sarcopenia are attenuated by life-long calorie restriction. *Faseb J*.
3. Leeuwenburgh, C., Gurley, C.M., Strotman, B.A., and Dupont-Versteegden, E.E. 2005. Age-related differences in apoptosis with disuse atrophy in soleus muscle. *Am J Physiol Regul Integr Comp Physiol*.
4. Judge, S., Jang, Y.M., Smith, A., Hagen, T., and Leeuwenburgh, C. 2005. Age-associated increases in oxidative stress and antioxidant enzyme activities in cardiac interfibrillar mitochondria: implications for the mitochondrial theory of aging. *Faseb J*.
5. Phillips, T., and Leeuwenburgh, C. 2004. Lifelong aspirin supplementation as a means to extending life span. *Rejuvenation Res* 7:243-251.
6. Obisesan, T.O., Leeuwenburgh, C., Phillips, T., Ferrell, R.E., Phares, D.A., Prior, S.J., and Hagberg, J.M. 2004. C-reactive protein genotypes affect baseline, but not exercise training-induced changes, in C-reactive protein levels. *Arterioscler Thromb Vasc Biol* 24:1874-1879.
7. Jang, Y.M., Kendaiah, S., Drew, B., Phillips, T., Selman, C., Julian, D., and Leeuwenburgh, C. 2004. Doxorubicin treatment in vivo activates caspase-12 mediated cardiac apoptosis in both male and female rats. *FEBS Lett* 577:483-490.
8. Hiona, A., and Leeuwenburgh, C. 2004. Effects of Age and Caloric Restriction on Brain Neuronal Cell Death/Survival. *Ann N Y Acad Sci* 1019:96-105.
9. Cassano, P., Lezza, A.M., Leeuwenburgh, C., Cantatore, P., and MN, G.A. 2004. Measurement of the 4,834-bp Mitochondrial DNA Deletion Level in Aging Rat Liver and Brain Subjected or Not to Caloric Restriction Diet. *Ann N Y Acad Sci* 1019:269-273.
10. Gredilla, R., Phaneuf, S., Selman, C., Kendaiah, S., Leeuwenburgh, C., and Barja, G. 2004. Short-Term Caloric Restriction and Sites of Oxygen Radical Generation in Kidney and Skeletal Muscle Mitochondria. *Ann N Y Acad Sci* 1019:333-342.
11. Dirks, A.J., and Leeuwenburgh, C. 2004. Aging and lifelong calorie restriction result in adaptations of skeletal muscle apoptosis repressor, apoptosis-inducing factor, X-linked inhibitor of apoptosis, caspase-3, and caspase-12. *Free Radic Biol Med* 36:27-39.
12. Julian, D., and Leeuwenburgh, C. 2004. Linkage between insulin and the free radical theory of aging. *Am J Physiol Regul Integr Comp Physiol* 286:R20-21.
13. Itoh, M., Oh-Ishi, S., Hatao, H., Leeuwenburgh, C., Selman, C., Ohno, H., Kizaki, T., Nakamura, H., and Matsuoka, T. 2004. The effects of dietary calcium restriction and acute exercise on the antioxidant enzyme system and oxidative stress in rat diaphragm. *Am J Physiol Regul Integr Comp Physiol*.
14. Judge, S., Judge, A., Grune, T., and Leeuwenburgh, C. 2004. Short-term CR decreases cardiac mitochondrial oxidant production but increases carbonyl content. *Am J Physiol Regul Integr Comp Physiol* 286:R254-259.
15. Phillips, T., and Leeuwenburgh, C. 2004. Lifelong aspirin supplementation as a means to extending life span. *Rejuvenation Research* 7.

16. Drew, B., and Leeuwenburgh, C. 2004. Ageing and subcellular distribution of mitochondria: role of mitochondrial DNA deletions and energy production. *Acta Physiol Scand* 182:333-341.
17. Drew, B., and Leeuwenburgh, C. 2003. Method for measuring ATP production in isolated mitochondria: ATP production in brain and liver mitochondria of Fischer-344 rats with age and caloric restriction. *Am J Physiol Regul Integr Comp Physiol* 285:R1259-1267.
18. Leeuwenburgh, C. 2003. Role of apoptosis in sarcopenia. *J Gerontol A Biol Sci Med Sci* 58:M999-M1001.
19. Shelke, R.R.J., and Leeuwenburgh, C. 2003. Life-long calorie restriction (CR) increases expression of apoptosis repressor with a caspase recruitment domain (ARC) in the brain. *FASEB J*:02-0803fje.
20. Drew, B., Phaneuf, S., Dirks, A., Selman, C., Gredilla, R., Lezza, A., Barja, G., and Leeuwenburgh, C. 2003. Effects of aging and caloric restriction on mitochondrial energy production in gastrocnemius muscle and heart. *Am J Physiol Regul Integr Comp Physiol* 284:R474-R480.
21. Selman, C., and Leeuwenburgh, C. 2003. The role of Id2 and apoptosis during skeletal muscle remodeling. *Am J Physiol Regul Integr Comp Physiol* 284:R538-539.
22. Payne, A.M., Dodd, S.L., and Leeuwenburgh, C. 2003. Life-long calorie restriction in Fischer 344 rats attenuates age-related loss in skeletal muscle-specific force and reduces extracellular space. *J Appl Physiol* 95:2554-2562.
23. Phillips, T., Childs, A.C., Dreon, D.M., Phinney, S., and Leeuwenburgh, C. 2003. A Dietary Supplement Attenuates IL-6 and CRP after Eccentric Exercise in Untrained Males. *Med Sci Sports Exerc* 35:2032-2037.
24. Selman, C., Kendaiah, S., Gredilla, R., and Leeuwenburgh, C. 2003. Increased hepatic apoptosis during short-term caloric restriction is not associated with an enhancement in caspase levels. *Exp Gerontol* 38:897-903.
25. Selman, C., Gredilla, R., Phaneuf, S., Kendaiah, S., Barja, G., and Leeuwenburgh, C. 2003. Short-term caloric restriction and regulatory proteins of apoptosis in heart, skeletal muscle and kidney of Fischer 344 rats. *Biogerontology* 4:141-147.
26. Green, P., and Leeuwenburgh, C. 2002. Mitochondrial dysfunction is an early indicator of doxorubicin-induced apoptosis. *Biochim Biophys Acta* 1588:94.
27. Childs, A.C., Phaneuf, S.L., Dirks, A.J., Phillips, T., and Leeuwenburgh, C. 2002. Doxorubicin treatment in vivo causes cytochrome C release and cardiomyocyte apoptosis, as well as increased mitochondrial efficiency, superoxide dismutase activity, and Bcl-2:Bax ratio. *Cancer Res* 62:4592-4598.
28. Drew, B., and Leeuwenburgh, C. 2002. Aging and the Role of Reactive Nitrogen Species. *Ann N Y Acad Sci* 959:66-81.
29. Pollack, M., Phaneuf, S., Dirks, A., and Leeuwenburgh, C. 2002. The Role of Apoptosis in the Normal Aging Brain, Skeletal Muscle, and Heart. *Ann N Y Acad Sci* 959:93-107.
30. Dirks, A., and Leeuwenburgh, C. 2002. Apoptosis in skeletal muscle with aging. *Am J Physiol Regul Integr Comp Physiol* 282:R519-527.
31. Phaneuf, S., and Leeuwenburgh, C. 2002. Cytochrome c release from mitochondria in the aging heart: a possible mechanism for apoptosis with age. *Am J Physiol Regul Integr Comp Physiol* 282:R423-430.
32. Phaneuf, S., and Leeuwenburgh, C. 2001. Apoptosis and exercise. *Med Sci Sports Exerc* 33:393-396.
33. Pennathur, S., Wagner, J.D., Leeuwenburgh, C., Litwak, K.N., and Heinecke, J.W. 2001. A hydroxyl radical-like species oxidizes cynomolgus monkey artery wall proteins in early diabetic vascular disease. *J Clin Invest* 107:853-860.
34. Leichtweis, S., Leeuwenburgh, C., Bejma, J., and Ji, L.L. 2001. Aged rat hearts are not more susceptible to ischemia-reperfusion injury in vivo: role of glutathione. *Mech Ageing Dev* 122:503-518.
35. Leeuwenburgh, C., and Heinecke, J.W. 2001. Oxidative stress and antioxidants in exercise. *Curr Med Chem* 8:829-838.
36. Adams, S., Green, P., Claxton, R., Simcox, S., Williams, M.V., Walsh, K., and Leeuwenburgh, C. 2001. Reactive carbonyl formation by oxidative and non-oxidative pathways. *Front Biosci* 6:A17-24.
37. Childs, A., Jacobs, C., Kaminski, T., Halliwell, B., and Leeuwenburgh, C. 2001. Supplementation with vitamin C and N-acetyl-cysteine increases oxidative stress in humans after an acute muscle injury induced by eccentric exercise. *Free Radic Biol Med* 31:745-753.

38. Pollack, M., and Leeuwenburgh, C. 2001. Apoptosis and aging: role of the mitochondria. *J Gerontol A Biol Sci Med Sci* 56:B475-482.
39. Manary, M.J., Leeuwenburgh, C., and Heinecke, J.W. 2000. Increased oxidative stress in kwashiorkor. *J Pediatr* 137:421-424.
40. Leeuwenburgh, C., Hansen, P.A., Holloszy, J.O., and Heinecke, J.W. 1999. Oxidized amino acids in the urine of aging rats: potential markers for assessing oxidative stress in vivo. *Am J Physiol* 276:R128-135.
41. Heinecke, J.W., Hsu, F.F., Crowley, J.R., Hazen, S.L., Leeuwenburgh, C., Mueller, D.M., Rasmussen, J.E., and Turk, J. 1999. Detecting oxidative modification of biomolecules with isotope dilution mass spectrometry: sensitive and quantitative assays for oxidized amino acids in proteins and tissues. *Methods Enzymol* 300:124-144.
42. Gokce, N., Keaney, J.F., Jr., Frei, B., Holbrook, M., Olesiak, M., Zachariah, B.J., Leeuwenburgh, C., Heinecke, J.W., and Vita, J.A. 1999. Long-term ascorbic acid administration reverses endothelial vasomotor dysfunction in patients with coronary artery disease. *Circulation* 99:3234-3240.
43. Powers, S.K., Ji, L.L., and Leeuwenburgh, C. 1999. Exercise training-induced alterations in skeletal muscle antioxidant capacity: a brief review. *Med Sci Sports Exerc* 31:987-997.
44. Leeuwenburgh, C., Hansen, P.A., Holloszy, J.O., and Heinecke, J.W. 1999. Hydroxyl radical generation during exercise increases mitochondrial protein oxidation and levels of urinary dityrosine. *Free Radic Biol Med* 27:186-192.
45. Leeuwenburgh, C., Hansen, P., Shaish, A., Holloszy, J.O., and Heinecke, J.W. 1998. Markers of protein oxidation by hydroxyl radical and reactive nitrogen species in tissues of aging rats. *Am J Physiol* 274:R453-461.
46. Crowley, J.R., Yarasheski, K., Leeuwenburgh, C., Turk, J., and Heinecke, J.W. 1998. Isotope dilution mass spectrometric quantification of 3-nitrotyrosine in proteins and tissues is facilitated by reduction to 3-aminotyrosine. *Anal Biochem* 259:127-135.
47. Leeuwenburgh, C., and Ji, L.L. 1998. Glutathione and glutathione ethyl ester supplementation of mice alter glutathione homeostasis during exercise. *J Nutr* 128:2420-2426.
48. Ji, L.L., Leeuwenburgh, C., Leichtweis, S., Gore, M., Fiebig, R., Hollander, J., and Bejma, J. 1998. Oxidative stress and aging. Role of exercise and its influences on antioxidant systems. *Ann N Y Acad Sci* 854:102-117.
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Manuscripts in preparation or submission:

1. Kujoth, G.C., Hiona, A., Pugh, T.D., Someya, S., Panzer, K., Wohlgemuth, S., Hofer, T., Hacker, T.A., Seo, A.Y., Sullivan, R., et al. 2005. Mitochondrial DNA Mutations, Oxidative Stress and Apoptosis in Mammalian Aging. *Science*, Under Review.
2. Hofer, T., Seo, A.Y., and Leeuwenburgh, C. 2005. Simultaneous quantification of RNA and DNA oxidative damage; RNA damage is more prone to oxidation in vitro and in vivo, under review.
3. Amie Dirks and Christiaan Leeuwenburgh. Apoptosis in Skeletal Muscle and Aging.
4. Sharon Judge and Christiaan Leeuwenburgh. Lifelong voluntary wheel running reduces subsarcolemmal and interfibrillar mitochondrial hydrogen peroxide production in heart: a possible mechanism for the increase in mean lifespan observed with exercise. Under review *AJP (Heart)* Accepted pending revisions.
5. Asimina Hiona and Christiaan Leeuwenburgh. Effect of age and calorie restriction on neurotrophic factors and apoptosis regulatory proteins in the brain (revision submitted). *Neurobiology of Aging*.
6. Rizwan Kalani and Christiaan Leeuwenburgh. C-reactive protein as a biomarker for aging research; evidence from life long wheel running and calorie restriction studies.

Book chapters:

1. Dirks and Leeuwenburgh. Pharmacotherapy of Cachexia"; Apoptosis in skeletal muscle cachexia and aging. 2005
2. Pollack, M and C. Leeuwenburgh. Molecular Mechanisms of Oxidative Stress and Aging: Free radicals, aging, antioxidants, and disease. *Handbook of Oxidants and Antioxidants in Exercise*. p 881-926, C.K. Sen, L. Packer and O. Hanninen, editors. Chapter 30: Elsevier Science, 1999.
3. Ji, L. L. and C. Leeuwenburgh. Glutathione and Exercise. In *Pharmacology in Exercise and Sports*. p 97-124, (Ed. S. Somani) CRC Press, Boca Raton. Florida, 1996.
4. Leeuwenburgh C., and L. L. Ji. The role of glutathione in preventing oxidative stress during exercise and training. In: *Skeletal Muscle Research*, pp 69-84. (eds. C.K. Sen & and M. Ataley). University Kuopio Proceedings, 1994.

Invited scientific presentation

International meeting at international sites:

- 2004 (July) Kyungjoo, South Korea, Invited Speaker 14th Qualitative and Quantitative Perspectives of Longevity.
- 2004 (July) Crete, Greece, European Cell Death Organization; Death on the Sea.
- 2004 (Sept) Aussois, France Invited Speaker Gordon Conference, Biology of Aging.
- 2004 (May) XII Meeting of the International Society for Free Radical Research. Buenos Aires; Argentina.
- 2003 (Nov) Free Radicals and Aging, McMaster University, Hamilton, Canada, (Invited Lecture)
- 2003 (Nov) Invited External Reviewer for PhD dissertation defense, Gianni Parise, McMaster University, Hamilton, Canada

- 2003 (Sept) Queens' College, Cambridge University, England, Association of Biomedical Gerontology 10th Congress (Invited Lecture)
- 2003 (Oct) Symposium of the German Society for Sports Medicine, Potsdam, Germany (Invited Lecture)
- 2003 (June) Oxidants and Antioxidants in Biology, Cadiz, Spain, (Invited Lecture)
- 2002 (July) 4th International Congress of Pathophysiology, Budapest, Hungary, (Invited Lecture)
- 2002 (Sept) 9th Biennial Meeting of the Society for Free Radical Research International, Paris, France (Poster)
- 2002 (June) Erasmus University, Rotterdam, Netherlands (Invited Lecture)
- 2002 (May) University of Catania, Department of Pharmacology, Sicily, Italy (Invited Lectures)
- 2001 (June) University of Bologna, Department of Biochemistry, Italy (Invited Lecture)
- 2001 (June) University of Bari, Department of Biochemistry, Italy (Invited Seminar)
- 2001 (Oct) International Association of Biomedical Gerontology (9th), Vancouver, Canada (Invited Lecture-1)
- 2001 (Oct) International Association of Biomedical Gerontology (9th), Vancouver, Canada (Invited Lecture-2)
- 2001 (May) 2nd International Conference on Oxidative Stress and Aging, Maui, Hawaii, USA (Poster)
- 2000 (June) Universidad Complutense, Department of Biology, Madrid, Spain, (Invited Seminar)
- 1998 (Sept) International Society for Free Radical Research Sao Paulo, Brasil, 1998 (Poster)
- 1998 (Jan) The University of Stellenbosch Medical School, Stellenbosch, South Africa,
(Workshop and Invited External Reviewer for Medical Students)

International meetings at national sites:

- 2004 Gerontological Society of America (Invited Lecture)
- 2004 Baltimore; Nathan Shock Center **Award Lecture at NIA**; USA
- 2004 Charleston, SC, The Calorie Restriction Society
- 2004 Washington DC, USA, Gerontological Society of America (Invited Speaker),
- 2004 American Aging Association (AGE), Public Lecture, St. Petersburg, FL
- 2004 Organizer and Lecturer of Pre-Symposium American Aging Association (AGE), St. Petersburg, FL
- 2004 University of Texas at San Antonio, TX (Invited Seminar)
- 2004 University of Colorado, Bolder, CO (Invited Lecture)
- 2003 Texas A & M, College Station, TX, (Invited Lecture)
- 2003 Grand Rounds, Why do we age? Vermont Medical School, Burlington, Vermont, (Invited Lecture)
- 2003 Vermont Medical School, Burlington, Vermont, (Invited Seminar Lecture)
- 2003 The Gerontological Research Center and San Antonio Nathan Shock Aging Center, San Antonio, TX
- 2003 Gerontological Society of America, San Diego, CA, (Invited Lecture)
- 2003 Diet and Optimum Health, Linus Pauling Institute, Oxygen Club California Portland (Invited Lecture)
- 2003 American College of Sports Medicine, San Francisco, (Mini-Symposium)
- 2002 Kronos, Sarcopenia and Aging, San Diego (Invited lecture)
- 2002 American College of Sports Medicine, Indianapolis (Mini-Symposium)
- 2001 American College of Sports Medicine, Baltimore, (Invited Lecture)
- 2000 Oxygen Society, San Diego, (3 Posters)
- 2000 Society of Geriatric Cardiology, Anaheim, CA, (Invited Lecture)
- 1999 American College of Sports Medicine, Seattle, (Invited Lecture)
- 1998 American College of Sports Medicine, Orlando, (Poster)
- 1997 American Aging Association, Philadelphia, (Invited Lecture)
- 1997 Oxygen Society, San Francisco, (Selected Lecture Presentation)
- 1996 Oxygen Society, Miami, (Selected Lecture Presentation and Poster)
- 1996 American Heart Association 69th Scientific Session, New Orleans, (Selected Lecture Presentation 1)
- 1996 American Heart Association 69th Scientific Session, New Orleans, (Selected Lecture Presentation 2)
- 1996 Federation of the American Society for Experimental Biological, Washington D.C., (Selected Lecture Presentation)
- 1995 Federation of the American Society for Experimental Biological, Atlanta (Poster)

Regional:

- 2004 Tallahassee, Florida State University, Dept. of Nutrition, Food and Exercise Science and Program in Neuroscience, USA.
- 2002 Washington University, JOH Meeting, Dept. of Internal Medicine, St. Louis, MO, (Invited Seminar)
- 2000 Cardiopulmonary Rehabilitation Symposium: Status 2000. Orlando, FL, (Invited Lecture)
- 1999 Southeastern ACSM Regional Conference Meeting, Norfolk, VI. (Invited Lecture)
- 1999 Cardiopulmonary Rehabilitation Symposium: Status'99. Orlando, FL, (Invited Lecture)
- 1995 Washington University, Department of Internal Medicine, St. Louis, MO, (Invited Seminar)

Local:

- 2004 University of Florida, Gainesville, FL, College of Medicine, Hypertension Center
- 2004 University of Florida, Gainesville, FL, College of Nursing
- 2004 University of Florida, Gainesville, FL, Center for Gerontological Studies
- 2003 University of Florida, Gainesville, FL, College of Health Professions
- 2003 University of Florida, Gainesville, FL, College of Nursing
- 2003 University of Florida, Gainesville, FL, College of Veterinary Medicine
- 2003 University of Florida, Gainesville, FL, Department of Food Science and Human Nutrition
- 2003 University of Florida, Gainesville, FL, Grant Writing Workshop
- 2003 University of Florida, Gainesville, FL, Free Radical Biology Meeting
- 2003 University of Florida, Gainesville, FL, Anesthesiology Residents
- 2003 University of Florida, Gainesville, FL, Gerontology Students
- 2002 University of Florida, Gainesville, FL, Alumni Association (Graduation Series)
- 2002 University of Florida, Gainesville, FL, Alumni Association (Back to School)
- 2002 University of Florida, Gainesville, FL, Institute on Aging
- 2001 University of Florida, Gainesville, FL, Center for Exercise Science
- 2001 University of Florida, Gainesville, FL, Center for Gerontology and Institute on Aging
- 2001 University of Florida, Gainesville, FL, Free Radical Meeting (Invited Lecture 1)
- 2001 University of Florida, Gainesville, FL, Free Radical Meeting (Invited Lecture 2)
- 2001 University of Florida, Gainesville, FL, VA Medical School
- 2001 University of Florida, Gainesville, FL, Veterinarian Medicine
- 2001 University of Florida, Gainesville, FL, Department of Nutrition
- 2000 University of Florida, Gainesville, FL, Geriatric Research Educational Clinical Center
- 1999 University of Florida, Gainesville, FL, Free Radical Meeting (Invited Lecture)
- 1998 University of Florida, Gainesville, FL, Department of Pharmaceutics and Pharmacodynamics
- 1996 Washington University School of Medicine, St. Louis, MO, Mass Spectrometer Resource Center

Community volunteer services position

- 1999-Present University of Florida, Volunteer Track and Field Mentor
Mentors 6-8 pole vaulters a year. Team SEC Champion 2000, 2001, 2002, 2003, 2004 SEC Champions; Laura Hawkins (2000-indoor; Louisville **Dental School**) and Megan Westfall (2001-outdoor, 2002-indoor, 2002-outdoor; **UF Veterinarian School**). All-American Division I (AA), Megan Westfall (2002). All-SEC; Kelly Greeno (**Masters in Health**); Anna Salzano (**Masters in Business**); Sabine Verbeek (**Medical School Student**; University of Amsterdam); Sarah Adams (**Law School**, UCLA)
- 1994-1995 Volunteered to assist the Decathletes of the University of Wisconsin. Louis Hinshaw (AA = NCAA All-American; UW, MD, UW Medical School; Residency), James Dunkelberger (NCAA Champion)
- 1990-1994 University of Illinois, Graduate Student and Volunteer Pole Vault Mentor Daren McDonough (AA and Runner-up NCAA), Steven Bridges (AA), Marko Koers (AA and NCAA-Champ, 800 and 1500m), Aaron Mubarak MBA Chicago,

1988-1990 (AA; Jumps)
Volunteer Pole Vault Mentor, University of Florida, David Watson (SEC-Champ and All-American), Mike Holloway (SEC-Champ and All-American; University of Florida, MD)

References

Former Mentors

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