

CURRICULUM VITAE

of

JOHN A. FAULKNER

PERSONAL DATA

Born: December 12, 1923, Kingston, Ontario, Canada

Married: Margaret Isabelle Rowntree

Children: Laura Megan and Melanie Anne

EDUCATIONAL BACKGROUND

Queen's University, Kingston, Ontario, B.A. 1949, Biology

Queen's University, Kingston, Ontario, B.P.H.E. 1950, Biology

Ontario College of Education, Toronto, Secondary School Teacher's Certificate 1951

University of Michigan, Ann Arbor, M.Sc. 1956

University of Michigan, Ann Arbor, Ph.D. 1962

MILITARY SERVICE

Flying Officer, Royal Canadian Air Force, 1942 - 1945, Operational Tour, Pilot, 91 RAF Squadron, January 1943 to May, 1945 European Theater.

HONORS AND AWARDS

University of Michigan Lifetime Service Award, 2009.

Kinesiology Alumni Society Board's Lifetime Achievement Award, University of Michigan, 2008.

The Reed O. Dingman Society of Plastic Surgery, William C. Grabb Medal of Honor, 2006.

Distinguished Faculty Achievement Award, University of Michigan, 1998.

Established Investigators Award, American Physiological Society, EEP Section, 1998.

Glenn Edmonson Award, Bioengineering Program, University of Michigan, 1993.

American Institute of Medical and Biomedical Engineering, **Founding Fellow** 1993 - present

Gerontological Society of America, 1985 - Present, **Fellow**, 1992 - Present.

Honor Award, American College of Sports Medicine, 1992.

Citation Award, American College of Sports Medicine, 1978.

American Association for Advancement of Science, Member, 1977 - Present, **Fellow** 1983 - Present.

American College of Sports Medicine, **Fellow** 1962 - Present; Board of Trustees, 1962 - 1975, 1983 - 1985; Vice-President, 1967 - 1969; President, 1971 - 1972.

Burke Aaron Hinsdale Scholar, The University of Michigan, 1962.

PATENTS

A three-dimensional mammalian skeletal muscle construct for clinical screening and research. (U-M File #1504, Patent application filed September 15, 1998).

PROFESSIONAL APPOINTMENTS

Professor of Biomedical Engineering, College of Engineering, 1974 - Present.

Professor of Molecular & Integrative Physiology, University of Michigan Medical School, 1971 - Present.

Research Professor, Institute of Gerontology, University of Michigan, 1986 - 2006.
Associate Director for Biological Research, Institute of Gerontology, January 1990 – 1998.
Interim Director, Institute of Gerontology, November 1, 1997 - September 31, 1998.
Acting Director, Institute of Gerontology, September 1, 1988 - February 28, 1989.
Associate Professor of Physiology, University of Michigan Medical School, 1966 - 1971.
Associate Professor, University of Michigan, School of Education, 1964 - 1966.
Assistant Professor, University of Michigan, School of Education, 1962 - 1964.
Instructor, University of Michigan, School of Education, 1960 - 1962.
Assistant Professor of Physical Education, University of Western Ontario, 1956 - 1960.
Science Teacher, Glebe Collegiate Institute, 1952 - 1956.
Science Teacher, Copper Cliff High School, 1951 - 1952.

EDITORIAL BOARDS

Deputy Editor, Journal of Gerontology-Biological Sciences, 2002 – 2005.
Editor, Journal of Gerontology-Biological Sciences, 1999 - 2001.
Associate Editor, Journal of Basic and Applied Myology, 1990 - 1999.
Associate Editor, Journal of Applied Physiology, May 1991 - June 1993.
Editorial Board, Journal of Gerontology-Biological Sciences, 1989 - 1993.
Editorial Board, Journal of Applied Physiology, 1984 - 1993.
Editorial Board, American Journal of Physiology, 1975 - 1979.
Editorial Board, University of Michigan Medical Center Journal, 1972 - 1980.
Editorial Board, Medicine and Science In Sports, Physiology Section Editor, Medicine and Science In Sports, 1972 - 1976.
Physiology Section, 1969 - 1972.
Ad Hoc Reviewer: American Journal Physiology-Cell Physiology; American Review Respiratory Disease; Medicine and Science in Sports and Exercise; Journal of Physiology (London), 1960 – Present.

NATIONAL INSTITUTES OF HEALTH, NATIONAL INSTITUTE ON AGING, STUDY SECTIONS

Musculoskeletal Rehabilitation Sciences Study Section July, 2007
Musculoskeletal Rehabilitation Sciences Study Section, July 2006
Teleconference Meeting of the Basic Biology of Aging Review Committee B, March, 2005
Teleconference Meeting of the Basic Biology of Aging Review Committee B, June 2004
Program Project Teleconference, Madison, Wisconsin, May 13, 2004
General Clinical Research Center Site Visit, Mayo Clinic, Rochester, MN, April 13-14, 2004
Program Project Site Visit, Madison, Wisconsin, November 16-17, 2003
Training Grant Study Section T32's, November 2003
Comparative Biol: Mechanisms of Aging, Panel Review, June 2003
Special Emphasis Panel Review, November 2002
Geriatric Rehabilitation Medicine, Skeletal Muscle Biology Teleconference, October 2002
Geriatric Rehabilitation Medicine, Skeletal Muscle Biology, February 2002
Geriatric and Rehabilitation Medicine, February, 1997, November, 1997, October, 1996, June, 1995, and November, 1994
Member of the Reviewers Reserve, July 1, 1989 - Present
Neurological Sciences, Bethesda, Maryland, November, 1993
Member, Respiration and Applied Physiology, 1980 - 1984

ADVISORY POSITIONS

External Advisory Committee Program Project on Therapies for Muscular Dystrophies, University of Washington, Seattle, Stanley Froehner, Project Director, October, 2005.

External Advisory Committee Program Project on Therapies for Muscular Dystrophies, University of Washington, Seattle, Stanley Froehner, Project Director, September, 2004.

Internal Advisory Committee Michigan Alzheimer's Disease Research Center, 2000 - present
Publication Committee, American Gerontological Society, January 2000 – 2004.

Michigan Health and Aging Research and Development Initiative – Bioengineering Task Force, 1999 - 2000.

International Muscle Symposium, Vienna, Austria 1984, 1988, 1992, 1996 and May, 2000.

Selection Committee, Glenn Foundation Award for Research on the Biology of Aging, Gerontological Society of America, 1991 - 1994.

Michigan Heart Association, Peer Review Committee, 1976 - 1980.

PROFESSIONAL SOCIETIES

American Institute of Medical and Biomedical Engineering, **Founding Fellow** 1993 - present
Gerontological Society of America, 1985 - Present, **Fellow**, 1992 - Present.

Biophysical Society, Member, 1983 - Present.

American Association for Advancement of Science, Member, 1977 - Present, **Fellow** 1983 - Present.

American Physiological Society, Member, 1968 - Present.

American College of Sports Medicine, **Fellow** 1962 - Present; Board of Trustees, 1962 - 1975, 1983 - 1985; Vice-President, 1967 - 1969; President, 1971 - 1972.

COMMITTEE AND ADMINISTRATIVE SERVICE (University of Michigan)

Chairman, Search Committee, Sports Injury Prevention Center, 2007

Chairman, Awards Committee, Department of Biomedical Engineering, College of Engineering, 2003 - Present

Search Committee for Institute of Gerontology Director (Robert Todd, Chair), 2002 - 2003

Institute of Gerontology Executive Committee, Member, 1991 – Present.

Search Committee, Member, Department of Biomedical Engineering, Biomaterials Search 1998 – 1999 and 1999 - 2000.

Search Committee, Member, Chair, Department of Biomedical Engineering, 1997 – 1998.

Co-Director, Reorganization of Biomedical Engineering at the University of Michigan, 1996 - 2000.

Executive Faculty Committee, Department of Biomedical Engineering, University of Michigan, July 1996 - Present.

Executive Committee, Bioengineering Program, The University of Michigan, 1979 - 1982; 1986 - June 1996.

Director, Nathan Shock Center for Basic Biology of Aging, Institute of Gerontology, University of Michigan, July 1995 - Present.

Chairman, Curriculum Committee, Bioengineering Program, The University of Michigan, 1986 - 1995.

Executive Faculty Committee, Institute of Gerontology, The University of Michigan, 1987 - August, 1989; January 1990 - Present.

Chairperson, Ad Hoc Committee on Aging, American College and Sports Medicine, 1994-1995.

Research Policies Committee, Office of the Vice President for Research, The University of Michigan, 1991 - 1994.

Search Committee, Chair, Department of Physiology/Bioengineering Program Faculty Member, 1990 – 1991.

Academic Affairs Council, Medical School, The University of Michigan, 1984 - 1986; Sept. 1989 - 1991.

Space Utilization Committee, Dept. of Physiology, The University of Michigan, 1981 - 1984; 1989 - 1992; Chairman 1990 - 1991.

Geriatric Center Planning Committee, The University of Michigan, 1988 - 1991

Chairman, Search Committee, Muscle Physiologist, Dept. of Physiology, The University of Michigan, 1990.
Geriatric Center Research Advisory Committee, 1988 - 1991.
Search Committee Member, Chairman of Bioengineering Program, The University of Michigan, 1988 - 1989.
Search Committee Member, Section Head of Plastic and Reconstructive Surgery, Department of Surgery, The University of Michigan, 1987 - 1988.
Physiological Acoustics Graduate Program, The University of Michigan, 1986 - 1987.
Member, Scientific Advisory Committee, Dental Research Institute, The University of Michigan, 1982 - 1985.
Search Committee Member, Chairman of Kresge Hearing Research Institute, The University of Michigan, 1983.
Search Committee Member, Chairman, Department of Anatomy, The University of Michigan, 1978.
Science Curriculum Committee, Integrated Premedical - Medical Program, 1977 - 1978.
Senior Year Committee, Medical School, 1968 - 1978.
Preceptor, Undergraduate Cardiovascular Training Program, 1968 - 1977.

CURRENT FUNDING

Reactive Oxygen Species: Stress and Damage in Old Mice 05/01/08 – 04/30/13
Project Director, NIH-NIA, PO1 AG20591.
Total costs \$6,174,332* for five years.

Reactive Oxygen Species: Stress and Damage in Old Muscles 07/01/09 – 10/31/10
(09-060 Student Supplement)
Project Director, NIH – NIA 3P01AG020591 07S1.
Total costs \$78,684 for 15 months.

* Approximate direct and indirect costs.

PENDING

None

VISITING SCIENTIST

Department of Anatomy and Human Biology, University of Western Australia, October, 1984, November 1987.
Department of Human Metabolism, Rayne Institute, University College Hospital Medical School, 8/77 - 1/78; 12/78 - 1/79 (supported by a grant from Muscular Dystrophy Association); 9/84 - 2/85.
Academisch Ziekenhuis Pellenberg, Katholieke Universiteit Leuven, 1974, 1978, 1980.

CHAIR OF DOCTORAL CANDIDATE COMMITTEE

Appaji Panchangam, Ph.D., 2008 (Chairman)
Christopher Mendias, Ph.D., 2008 (Chairman)
Rainer Ng, Ph.D., 2008 (Chairman)
Yingxin Gao, Ph.D., 2007 (Co-Chairman)
Erik Rader, Ph.D., 2004 (Chairman)
Marlene Calderon, Ph.D., 2002 (Chairman)
Douglas Dow, Ph.D., 2002 (Chairman)
Mark Palmer, Ph.D., 2001, (Co-Chairman)
Paul Kosnik, Ph.D., 2000, (Co-Chairman)
Michael Stucky, Ph.D., 2000, (Chairman)
Kam Hunter, Ph.D., 1997, (Chairman)

Julie Opiteck, Ph.D., 1997 (Chairman)
 Robert Dennis, Ph.D., 1996, (Chairman)
 Stephanie Miller, Ph.D., 1996, (Chairman)
 Peter Macpherson, Ph.D., 1995, (Chairman)
 Veerichetty A. Kadhiresan, Ph.D. 1993, (Chairman)
 Susan V. Brooks, Ph.D. 1992, (Chairman)
 William M. Kuzon, Ph.D. 1990, (Outside Reader), University of Toronto, Toronto (Canada)
 Paul Guelinckx, Ph.D. 1988, (Co-Promoter), Catholic University, Leuven (Belgium)
 Dennis R. Claflin, Ph.D. 1985, (Chairman)
 Kevin K. McCully, Ph.D. 1985, (Chairman)
 Steven S. Segal, Ph.D. 1984, (Co-Chairman)
 Paul E. Ciske, Ph.D. 1982, (Chairman)
 Thomas G. Sandercock, Ph.D. 1982, (Co-Chairman)
 Thomas J. Armstrong, Ph.D. 1976, (Co-Chairman)
 George Heigenhauser, Ph.D. 1975, (Chairman)
 Tony Reybrouck, Ph.D. 1975, (Outside Reader), Catholic University, Leuven (Belgium)
 Gaston G. Marcotte, Ph.D. 1973, (Co-Chairman)
 Richard R. Monpetit, Ph.D. 1972, (Chairman)
 Leo C. Maxwell, Ph.D. 1971, (Chairman)
 George A. Brooks, Ph.D. 1970, (Chairman)
 John G. Albinson, Ph.D. 1969, (Co-Chairman)
 Jack K. Barclay, Ph.D. 1969, (Chairman)
 Ronald J. Ferguson, Ph.D. 1967, (Chairman)
 Ray T. Hermiston, Ph.D. 1967, (Chairman)
 David A. Cunningham, Ph.D. 1966, (Chairman)
 John R. Magel, Ph.D. 1966, (Chairman)

MEMBER OF THE FOLLOWING DOCTORAL COMMITTEES

Nicole Lockhart, 2005; Christiana DelloRusso, 2002; Gregory Crawford, 2000; Daniel E. Michele, 2000; Beth Rust, 2000; Jill Rafael, 1996; Vinod Subramaniam, 1996; Lynn Billington, 1995; G.A. Cox, 1994; N. Cole, 1992; J. Sciote, 1992; S.C. Kandarian, 1988; F.M. Miles, 1987; P.V. Loubert, 1986; R.E. Must, 1984; J.G. Cannon, 1983; J.F. Nillanacei, 1983; T.C. Scanlon, 1982; E.S. Patterson, 1981; S.L.G. Rodgers, 1981; P.A. Rodgers, 1980; R.L. Marsh, 1979; F.L. Belloni, 1975; F.S. Mong, 1975; N.A. Noble, 1975; R.M. Lampman, 1974; A.L. Henninger, 1973; B.M. Quigley, 1973; G.L. Trupin, 1973; R.K. Schutz, 1972; D.E. Moreman, 1971; J.R. Richardson, 1971; M.H. Snow, 1971; P.J. Frangione, 1970; L.W. Jankowski, 1969; J.R. Graff, 1969; ; E.R. Claitt, 1967; W.D. McArdle, 1965.

POST-DOCTORAL FELLOWS

Chris Mendias	2007-2008	NIH, Regenerative Sciences Training Program
Mark Palmer	2005-2007	NIH, Regenerative Sciences Training Program
Mark Palmer	2004-2005	NIA, Multidisciplinary Research Training in Aging
Russell Witte	2004-2006	NIH, Tissue Engineering & Regeneration Training Program
Erik Rader	2004-2006	NIH, Regenerative Sciences Training Program
Tatiana Kostrominova	2001-2004	NIA, Multidisciplinary Research Training in Aging
Keith Baar	2001-2003	NIA, Multidisciplinary Research Training in Aging
Peter Macpherson	1995-1997	NIA, Multidisciplinary Research Training in Aging
Steven Devor	1995-1997	NIA, Multidisciplinary Research Training in Aging
Gordon Lynch	1995-1997	C.J. Martin Fellowship, National Health and Medical Council, Melbourne, Australia
Jack van der Meulen	1992-1994,	NIA, Multidisciplinary Research Training in Aging
Susan Brooks	1992-1995,	NIA, Multidisciplinary Research Training in Aging
Neil Cole	1992-1995,	NIA, Multidisciplinary Research Training in Aging
Bernard Doerning	1990-1992,	NIA, Multidisciplinary Research Training in Aging
Eileen Zerba	1988-1991,	NIA, Multidisciplinary Research Training in Aging

Harold Burton	1983-1987, Medical Research Council, Canada
Susan Barry	1983-1985, National Service Research Award
Claude Côté	1980-1984, Medical Research Council, Canada
Casey Donovan	1981-1983, National Service Research Award
Timothy White	1976-1978, Michigan Heart Association
Leo Maxwell	1971-1973, Muscular Dystrophy Fellowship

VISITING FACULTY

Robert Mazzeo, University of Colorado, Boulder, CO, 2001.
 Xioming GU, Qin Du Stomatological Hospital, Xi'an, People's Republic of China, 1994- 1995.
 Kotoro Yoshimura, University of Tokyo, Japan, 1994-1995.
 Hirotaka Asato, University of Tokyo, Japan, 1993-1994.
 M. Khaled Hassan, University of Cairo, Egypt, 1993.
 Steiner Okland, University of Oslo, Norway, 1986-1987.
 Danjun Lu, National Research Institute of Sports Medicine, Beijing, China, 1984-1985.
 Paul Guelinckx, Catholic University of Leuven, Belgium, 1982-1983.
 John McGeachie, University of Western Australia, 1981.

INVITED SPEAKER AT MEETINGS, WORKSHOPS, AND MEMORIAL LECTURES

(In Reverse Chronological Order)

The Physiological Society Meeting "Skeletal Muscle Ageing: The Life, Times & Death of Single Muscle Fibres" Dublin, Ireland, July, 2009
 Krieger Geriatric Conference "The Life & Times of Skeletal Muscles in Humans during Aging" Novi, MI, November, 2008.
 Nathan Shock Center Conference on Aging "Age-Related Muscle Atrophy: Causes and Mechanisms" Keynote Speaker, San Antonio, TX, October, 2007.
 Muscular Dystrophy Conference, "Sarcomere Dynamics: the critical factor underlying injury to dystrophic muscles." Seattle, WA, June, 2007.
 Nathan Shock AGE Meeting, "The Contractility Core – A Unique Resource" San Antonio TX, June, 2007.
 John Sutton Memorial Lecture "Facts and Falacies of Age-Related Changes in Skeletal Muscle" Halifax, Nova Scotia, November, 2006.
 Physiology 606 - "Investigations of the 'Aging of Skeletal Muscles' – a 40 year Perspective" Canadian Physiological Society, 2006 November 13th, 2006.
 ComBio Plenary Lecture. "New Insights in age-related impairments in muscle function" Brisbane, Australia, September, 2006.
 Frontiers in Myogenesis Society for Muscle Biology, Callaway Gardens, Pine Mountain, GA. "Muscle diseases" Invited Speaker, April, 2006.
 Novartis/Idenix Roundtable Discussion "Serologic Creatine Phosphokinase (CPK) Levels: normal range, pathophysiology of serologic levels" Discussion Leader, Florham Park, NJ, January, 2006.
 University of Washington, Program Project Grant Review Committee Meeting. "Molecular and Cellular Therapies for Muscular Dystrophy" October, 2005.
 University of Iowa, "Age-Related Changes in the Structure and Function of Skeletal Muscles of Dystrophic and Wild-Type Mice" Invited Speaker, July, 2005.
 University of Liverpool, Symposium on ROS, Muscle and Ageing. "Progressive Resistance Training with Shortening Contractions Ameliorates Age-related Losses in Structure and Function of Single Fibers." Invited Speaker; and "ROS Generation, Adaptive Responses and Ageing" Discussion Leader, May, 2005.
 Genetic Modifications of Skeletal Muscle in Old Animals Conference in Whistler, British Columbia. "Lateral Transmission of Force in Dystrophic Muscles." Invited Speaker,

April 2005. University of Michigan Seminar Series: "Age-related Changes in Skeletal Muscles: Facts and Fallacies." Invited Speaker, December, 2004.

University of Texas Health Science Center at San Antonio, Nathan Shock Center
Conferences on Aging: Oxidative Stress & Damage in Aging. "Age-Related Skeletal Muscle Atrophy, Weakness, and Fatigability: Timing and Causality." Invited Speaker, October, 2004.

University of Waterloo, Toronto, Ontario. Adaptive Response Strategies to Perturbations in ATP Homeostasis in Muscle: A Symposium in Honor of Howard J. Green, "Age-Related Changes in the Structure and Function of Skeletal Muscles: Timing and Causality." Invited Speaker, September, 2004.

University of Washington, Department of Physiology and Biophysics, "Impaired Lateral Transmission of Force in Dystrophic Muscles: Mechanism of Injury." Invited Speaker, September, 2004.

Expression Array Workshop "From Analysis to Aging" Nathan Shock Center of Excellence in the Basic Biology of Aging Seattle Cancer and Aging Program, June, 2004.

University of Iowa, Dept. of Physiology and Biophysics, "Age-Related Changes in the Structure and Function of Skeletal Muscles: Timing and Causality." Invited Speaker, June, 2004.

A New Paradigm for Aging Research: When Do the Biological Changes of Aging Begin? National Institutes on Aging Workshop, "Age-associated Changes in Skeletal Muscle Structure and Function: Timing and Causality" Bethesda, MD, May, 2004.

University of Texas Health Science Center, San Antonio: IGF, Aging and Apoptosis Meeting, Discussion Leader, October, 2003

UCSF Biophysics Dept., "Degeneration and Regeneration of Fibers in Muscles of Old Animals" Invited Speaker, May, 2003.

Stanford University GRECC Rehabilitation Unit, "Fighting Physical Frailty: Maintaining New Fibers in Old Muscles," Invited Speaker, May, 2003.

University of Liverpool, Dept. of Medicine "Impaired Recovery of Skeletal Muscles of Old Mice Following Contraction-Induced Injury" Invited Speaker, March, 2003.

Tenth Annual Summer Training Course in Experimental Aging Research, University of Michigan, Research Lecture: "Reactive Oxygen Species and the Aging of Skeletal Muscle", June 2002.

Penn State Gerontology Center Colloquium Series. Pennsylvania State University, University Park, October, 2001

6th Annual James D. Hardy Memorial Lecturer, John B. Pierce Laboratory, Yale University, April 2001.

Kinesiology Seminar Series. Invited Speaker, University of Michigan, Ann Arbor, February 2001.

Richard H.T. Edwards' Retirement Symposium, Invited Speaker, Novartis Foundation, December 2000.

CSEP/FACA Conference. Invited Speaker, Canmore, Alberta, Canada, October 2000.

Functional Tissue Engineering **Workshop**, Invited Speaker, Tampa, FL, September 2000.

Lou E. Alley Memorial Lecturer, University of Iowa, May 2000.

University of Edinburgh, Geriatric Medicine Section, Invited Speaker, Edinburgh, Scotland, March 2000.

Experimental Biology. Invited Speaker, Exeter University, Manchester, England, March 2000.

Gordon Conference on Aging, Discussion Leader, Ventura Beach, CA, January 2000.

American Thoracic Society: "Mechanisms Producing Contraction-Induced Muscle Injury: Applications to the Diaphragm", Invited Speaker, San Diego, CA, April 1999.

University of Iowa, Department of Physiology, November, 1998.

Symposium on Neurodegeneration, Aging and Oxidative Stress, Invited Speaker, Lawrence, Kansas, May 1998.

Experimental Biology. Invited Speaker, Environmental and Exercise Section, San Francisco, May 1998.

4th Peter A. Rechnitzer Lecturer on Aging, University of Western Ontario, April 1998.

Royal Free Hospital, Hampstead London, England, Invited Speaker, March, 1997.

Gerontological Society of America, the Nathan Shock Center Symposium: The Cellular and Molecular Biology of Aging. Co-Chair, Cincinnati, Ohio, November 1997.

Prescription for Longevity; Fads and Reality **Workshop**, National Institute on Aging, Canyon Ranch, Tucson, Arizona, November 1997.

Gordon Conference, Bioengineering and Orthopaedic Science, Invited Speaker, New Hampshire, July 1996.

Keystone Symposia, Molecular and Cellular Biology, Invited Speaker, Taos, New Mexico, January 1996.

Sarcopenia **Workshop**, National Institute on Aging, Airlie, Virginia, September 1995.

4th International Muscle Symposium, Invited Speaker and Chair, Muscle regeneration II, Zürich, Switzerland, March 1995.

Sarcopenia **Workshop**, National Institute on Aging, Airlie, Virginia, September 1994.

International Conference on Neural and Neuromuscular Aspects of Muscle Fatigue, Discussant, Miami, Florida, November 1994.

Aging and Musculoskeletal Decline **Workshop**, National Institute on Aging, Santa Barbara, California, August 1994.

Symposium, Neural Prostheses: Motor Systems IV, Invited Speaker, Mt. Sterling, Ohio, July 1994.

American College and Sports Medicine Symposium, Chair, Indianapolis, Indiana, June 1994.

Gordon Conference on Aging, Invited Speaker, Cosa Serena, California, February 1994.

Mitochondrial Dysfunction and Aging **Workshop**, National Institute on Aging, Bethesda, Maryland, December, 1993.

2nd Nancy Nichols Jensen Memorial Lecturer, University of Arizona, May 1993.

American Academy of Orthopaedic Surgeons, Invited Speaker, Tampa, Florida, November 1993.

American Academy of Orthopaedic Surgeons, Invited Speaker, Colorado Springs, 1992.

4th International Serling Symposium on Biology of Aging, Invited Speaker, Rehovot, Jerusalem, Israel, September 1992.

Gordon Conference, Biology of Aging, Invited Speaker, New Hampton, NH, August 1992.

Physical Activity, Fitness & Health, Invited Speaker, Toronto, Canada, May 1992.

FASEB Physiology Symposium, Session Chairman and Speaker, Anaheim, CA, April 1992.

International Symposium on Current Problems of Neuromuscular Fatigue, Invited Speaker, Amsterdam, Netherlands, April 1992.

International Scientific Congress, Physiology of Mountain Sports, Invited Speaker, Chamonix, France, February 1992.

International Symposium in Honor of J. Ghesquiere, Invited Speaker, Leuven, Belgium, October 1991.

Muscle Function in Normal and Pathological States: A Research Retreat, Invited Speaker, New Hampton, New Hampshire, August 1991.

European Developmental Biology Congress, Invited Speaker, Jerusalem, Israel, August 1991.

International Symposium on Basic and Applied Myology: Perspectives for the 90's, Session Chairman and Speaker, Abano Terme, (Padova), Italy, May 1991.

Symposium on Sleep and Respiration in Aging Adults, Invited Speaker, South Shore Harbour, Texas, March 1991.

Liber Amicorum, Mikel Ostyn, Leuven, Belgium, October 1990.

Third Vienna Muscle Symposium, Vienna, Austria, June 1990.
 Gordon Conference, Biology of Aging, Session Chairman and Speaker, Plymouth, New Hampshire, July, 1989.
 XIII Congress of the International Society for Heart Research, Ann Arbor, Michigan, May 1989.
 Hypoxia and Cold, Sixth International Symposium, Lake Louise, Canada, February 1989.
 Exercise, Fitness, and Health, Toronto, Canada, May 1988.
 Muscle & Nerve: Factors Affecting Physical Performance, Sydney, Australia, November, 1987.
 Second Vienna Muscle Symposium, Vienna, Austria, June 1985.
 Hypoxia and Cold, Fourth International Hypoxia Symposium, Lake Louise, Canada, February, 1985.
 Congress of Sports Medicine, Sydney, Australia, October 1984.
 McMaster International Symposium on Human Muscle Power, July 1984.
 Hypoxia, Exercise and Altitude, Third Banff International Hypoxia Symposium, January, 1983.
 First Vienna Muscle Symposium, on Muscle Transplantation, Vienna, Austria, June, 1981.
 International Symposium on Exercise Bioenergetics and Gas Exchange, Milan, Italy, July, 1980.
 Second World Congress for Microcirculation, La Jolla, California, July 1979.
 Moyers Symposium, Muscle Adaptation in the Crano-facial Region, Ann Arbor, Michigan, 1978.
 International Symposium on the retirement of Professor P.P. de Nayer, Leuven, Belgium, November 1976.
 Brazilian Congress of Sports Medicine, Puerto Alegre, Brazil, April 1975.
 International Symposium of Red Cell Metabolism and Function, Ann Arbor, Michigan, 1970.
 Albuquerque International Symposium, Human Performance at Altitude, 1967.

Teaching Experience

2009, May 5th “Inevitable Age Related Changes in Skeletal Muscles of Humans and Effective Interventions” Mini Med School Course directed by Gerald Abrams.
 2007 March 12th “Age-related Changes in Skeletal Muscle” Lecture to Orthopaedic Residents.
 2005 June 1st “Age-related Changes in Skeletal Muscle” Lecture to Orthopaedic Residents.
 2001 Winter Term. Course Coordinator for Biomedical Engineering Faculty Seminars, “Functional Tissue Engineering.”
 2000 Fall Term. Skeletal Muscle Module, Organogenesis of Complex Systems, Cell Developmental Biology.
 2000 Winter Term. Integrative Genomics Course lectures on “muscle function in dystrophic mice” in the Physiology Department.
 1997 Winter Term. Co-directed with Susan V. Brooks *Structure-Function Relationships in Skeletal Muscle* in the Biomedical Engineering Curriculum.
 1993-97. With Steven Goldstein designed and implemented a nine course curriculum in *Musculoskeletal Tissue Engineering* with support from a Whitaker Opportunity Award.
 1993 - Present. Initially Course Coordinator and then taught in the Musculoskeletal Sequence for MII Year.
 1991, 92, 93 Fall Term. Developed and directed a graduate course in *Selected Topics in Quantitative Physiology* for the Biomedical Engineering Program. Approximately thirty students a term. Susan V. Brooks took over the responsibility of directing this course in 1994.

1986, 87, 88 Fall Term. Developed and directed a graduate course on the *Physiology of Aging*. Approximately 15 students took this course for credit.

1980 Winter Term. Directed the Graduate Physiology Course.

1978-80 Winter Term. Taught 5 lectures on muscle physiology in the Graduate Physiology Course.

1974-79 Winter Term with Art Vander and Harvey Sparks designed the Physiology Course for 50 Inteflex students and then taught a third of the course.

1973-74 Fall Term. Directed and taught in the Dental Physiology Course.

1970-85. Taught Respiration, Metabolism, Muscle, Circulation in the Medical Physiology Course.

1965-1970. Course Director of Physiology 101, Fall Term. Taught general human systems physiology to approximately 280 undergraduate students per term.