

# Mark S. Osadjan, Ph.D.

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## EDUCATION:

- 1991 to 1996      Ph.D., Molecular and Integrative Physiology  
                         The University of Illinois at Urbana-Champaign
- 1988 to 1991      M.S., Physiology and Biophysics  
                         The University of Illinois School of Medicine
- 1984 to 1988      B.S., Biology (Neuroscience concentration, Philosophy minor)  
                         The University of Illinois at Urbana-Champaign

## WORK EXPERIENCE:

- 2016 to Present    Assistant Professor, The University of Minnesota-Duluth  
                         Teaching faculty position in the Department of Biology  
                         Lecture and coordinate undergraduate biology courses, involving around 300 students per year. Develop all curricular content, lab equipment, manuals, and exercises. Manage course budgets and about 15 teaching assistants per year.
- 2003 to 2016      Senior Lecturer, The University of Chicago  
                         Teaching faculty position in the Biological Sciences Collegiate Division, adjunct appointment in the Center for Gender Studies.  
                         Lectured and coordinated undergraduate biology courses, involving around 400 students per year. Maintained and developed all lab equipment, manuals, and exercises. Worked in teams to create curricular tracks. Developed and taught topical biology courses. Managed about 20 teaching assistants per year.
- 1998 to 2003      Instructor and Senior Instructor, The University of Colorado at Boulder  
                         Teaching faculty position in the Department of Integrative Physiology  
                         Lectured and coordinated the teaching laboratories for Human Physiology (350 students/year), Comparative Animal Physiology (75 students/year), Cellular and Integrative Physiology (150 students/year), and non-majors biology (500 students/year). Wrote and upgraded laboratory manuals, developed and maintained all equipment for the above courses.
- 1996 to 1997      Postdoctoral Fellow, University of Illinois at Urbana-Champaign  
                         Genetic engineering with Dennis Buetow, Les Domier, and Schuyler Korban. Developed a fruit-derived transgenic vaccine against respiratory syncytial virus (RSV). US Patent No. 8704185 (2000).

**TEACHING EXPERIENCE:**

Physiology	Human Physiology - lecture and labs (30+ terms, 1991-present) Exercise Physiology - lecture and labs (11 terms, 2008-2016) Integrative Physiology (4 terms, 2000-2016) Metabolism and Nutrition (10 terms, 2008-2016) Physiology of Addiction - seminar course (1 term, 2003) Comparative Animal Physiology - lecture and labs (7 terms, 1991-2003) Cellular Physiology - lecture and labs (4 terms, 2000-2003) Evolutionary Physiology – seminar course (2 terms, 2000-2001) Cell and Membrane Physiology - lab TA (6 terms, 1991-1997) Systems and Integrative Physiology - lab TA (4 terms, 1992-1996)
Neuroscience	Systems Neuroscience - Coordinated lectures and labs (5 terms, 2003-2008) Cellular Neuroscience - Coordinated lectures and labs (3 terms, 2004-2006) Neuroscience Reading Group - Various topics and terms (1991-2003)
Biology	Biology and Society - lecture/lab course for non-majors (2 terms, 2016-2017) Biology of Gender - seminar course (15 terms, 2004-2016) Alpine/Arctic Biology – team-taught lecture course (5 terms, 1998-2003)
Field Courses	Adaptational Physiology - 2-week field course in Galapagos Islands (2003) Arctic Biology - 6-week summer course through University of Iceland (2002)
Anatomy	Human Anatomy – lecture, labs, TA, and dissector (3 terms, 1990-present) Comparative Vertebrate Anatomy - lab TA (2 terms, 1993-1994)

**RESEARCH EXPERIENCE:**

2003 to present	<b>Independent Student Research Projects</b> Oversee occasional undergraduate research projects in human metabolism, exercise physiology, biomechanics, teaching methodology.
1996 to 1997	<b>Development of a transformation vector containing the human respiratory syncytial virus (RSV) F-protein gene — US Patent No. 8704185</b> Postdoctoral research with D. Buetow, L. Domier., and S. Korban, Department of Natural Resources and Environmental Sciences, University of Illinois
1989 to 1996	<b>Characterization of the antifreeze peptide system of the Antarctic eel pout, <i>Pachycara brachycephalum</i></b> Dissertation research under Arthur L. DeVries, Ph.D., Dept. of Molecular and Integrative Physiology, University of Illinois at Urbana-Champaign
1988 to 1989	<b>Isolation of a blood factor affecting temperature adaptation in the channel catfish, <i>Ictalurus punctatus</i></b> Masters research under C. Ladd Prosser, Ph.D. Dept. of Physiology and Biophysics, University of Illinois at Urbana-Champaign
1987 to 1989	<b>The effect of postnatal hypothyroidism on neural development in the laboratory rat, <i>Rattus norvegicus</i></b> Undergraduate honors research under Esmail Meisami, Ph.D., Dept. of Physiology & Biophysics, University of Illinois at Urbana-Champaign

**ACADEMIC AWARDS:**

- 2011            **Quantrell Award for Excellence in Undergraduate Teaching**  
Selected as one of 5 University of Chicago faculty for excellence in undergraduate education, based on nominations of students and colleagues. Presented 11 June 2011.
- 2002            **Boulder Faculty Assembly Excellence Award in Teaching**  
Selected among all University of Colorado faculty for excellence and innovation in teaching, based on nominations of deans and department chairs. Presented 22 April 2002.
- 1996            **Scholander Award finalist**  
Finalist in a competition with other comparative physiology poster presentations at the Experimental Biology (FASEB) international meeting.
- 1995            **James E. Heath Outstanding Instructor Award**  
Recognized by the University of Illinois College of Liberal Arts and Sciences for consistent motivation and independent performance in teaching duties.
- 1994            **Fellow, Systems and Integrative Biology Training Grant**  
Selected as one of 8 University of Illinois trainees on a 3-year NIH-sponsored fellowship.
- 1990            **United States Navy Antarctic Service Medal**  
Awarded for leadership in the United States Antarctic Research Program.

**UNIVERSITY SERVICE:**

- 2016 to present    **Curriculum Committee of the Department of Biology**  
Revise the undergraduate curriculum of the department
- 2005 to 2016      ***The Vein* Faculty Advisor**  
Faculty advisor for a health-advocacy student organization
- 2005 to 2016      **Faculty Fellow, University of Chicago College Housing Office**  
Serve as a faculty point of contact for about 50 students per year
- 2003 to 2016      **University of Chicago LGBT Mentoring Program**  
Serve as a committee member to foster a welcoming campus environment
- 2002 to 2003      **Boulder Faculty Assembly Executive Committee**  
Assisted in the governance of the University of Colorado faculty
- 2001 to 2003      **Curriculum Committee of the Department of Integrative Physiology**  
Revised the undergraduate curriculum of the department
- 2001 to 2003      **Transfer Credit Evaluator**  
Evaluated biology courses of other institutions toward the UCB Biology degree
- 1998 to 2003      **Alpha Epsilon Delta Faculty Advisor**  
Faculty advisor for a pre-health service organization of 300 students
- 1998 to 2003      **College of Arts and Sciences Diversity Committee**  
Ensured that all student populations are represented in College decisions

## **TECHNICAL SKILLS:**

### **Physiology**

Care and handling of laboratory animals, aquatic systems, and domestic farm animals  
Surgical techniques including cannulation, perfusion, ovariectomy, suturing  
Anesthesia and euthanasia of laboratory animals  
Metabolic monitoring of animals and humans via oxygen and carbon dioxide analyses  
Intracellular and extracellular recording of membrane potentials  
Use and comparison of various computer-aided data acquisition systems

### **Anatomy**

Dissection and identification of preserved animal tissues  
Prosection of human cadavers and brains

### **Molecular/Cell Biology**

Preparation of DNA and RNA from plant, animal, and prokaryotic organisms  
Preparation and screening of genomic DNA libraries  
Design and synthesis of plasmid vector constructs  
Analysis of DNA and RNA via electrophoresis, Southern hybridization, northern hybridization, PCR and RT-PCR amplification, and manual DNA sequencing  
Gene promoter analysis  
Transformation of genetic material by chemical methods and electroporation  
Use and comparison of many commercially available molecular biology kits

### **Biochemistry**

Quantitative enzyme assays  
Purification of proteins by electrophoresis, column chromatography and RP HPLC  
Screening of proteins by western blot analysis, enzyme-linked immunosorbent assay (ELISA), radioimmunoassay (RIA), enzyme assay, and colorimetry  
Preparation of cellular components by isopycnic and differential centrifugation  
Ion measurements by flame photometry and vapor pressure osmometer

### **Microbiology**

Growth, purification, and manipulation of bacteria, plasmid, and phage derivatives

### **Histology**

Dissection, trimming, sectioning, and fixation of biological samples  
Staining techniques (haematoxylin and eosin, Nissl, and silver staining)

### **Instrumentation**

Design, maintenance, and repair of laboratory equipment  
Strong electrical and mechanical skills, extensive experience with shop equipment

**PUBLICATIONS:**

- Osadjan, M. and Colton, T., *Fundamentals of Physiology: A Laboratory Manual*. University of Chicago, 2003-2016.
- Sandhu, J.S., Krasnyanski, S.F., Domier, L.L., Korban, S.S., Osadjan, M.D., and Buetow, D.E. (2000). Oral immunization of mice with transgenic tomato fruit expressing respiratory syncytial virus-F protein induces a systemic immune response. *Transgenic Res.* 9: 127-135.
- Osadjan, M. *Cell Physiology: A Laboratory Manual*. University of Colorado, 1999.
- Cundiff, M., Armstrong, D., and Osadjan, M. (1999). *Biology: A Human Approach, Laboratory Handbook / Study Guide*. McGraw-Hill Companies, Inc., New York. 120 pp.
- Sandhu, J.S., Osadjan, M.D., Krasnyanski, S.F., Domier, L.L., Korban, S.S., and Buetow, D.E. (1999). Enhanced expression of the human respiratory syncytial virus F protein gene in apple leaf protoplasts. *Plant Cell Rep.* 18: 394-397.
- Osadjan, M.D. (1996) Characterization of the antifreeze peptide system of the antarctic eel pout, *Pachycara brachycephalum*. Ph.D. dissertation, University of Illinois at Urbana-Champaign, 125 pp.
- Osadjan, M.D., DeVries, A.L., and Cheng-DeVries, C.-H. (1996) Characterization of the antifreeze peptide system of an antarctic zoaroid — an evolutionary study. *FASEB J.* 10: A299.
- Osadjan, M.D., DeVries, A.L., and Cheng-DeVries, C.-H.C. (1995) The composition and organization of antifreeze peptide genes of the antarctic eel pout *Pachycara brachycephalum*. *Cryobiology* 32 (6): 586.