

## **CURRICULUM VITAE**

**Leah J. Siskind, Ph.D.**

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Department of Medicine  
General Internal Medicine/ Geriatrics  
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### **Education:**

- 2000-2003            University of Maryland College Park  
Department of Biology  
Ph.D. in Biology (2003)
- 1994-1998            University of Maryland College Park  
College of Chemical and Life Sciences  
B.S. in Neurobiology and Physiology (1998)  
College Park, MD

### **Positions:**

- 2008-current            Research Health Scientist  
Research and Development  
Ralph H. Johnson Veteran Affairs Medical Center, Charleston, SC
- 2008-current            Research Assistant Professor  
Medical University of South Carolina  
Department of Medicine  
Division of General Internal Medicine/Geriatrics, Charleston, SC  
Research Areas: mitochondria-mediated apoptosis, sphingolipid  
metabolism and signaling, nephrotoxicity and nephropathy
- 2007-2008            Postdoctoral Fellow (Laboratory of Dr. Lina Obeid)  
Medical University of South Carolina, Dept of Medicine, General Internal  
Medicine/Geriatrics, Charleston, SC  
Research Areas: mitochondria-mediated apoptosis, sphingolipid  
metabolism and signaling, acute renal failure
- 2003-2006            Faculty Research Associate/ Postdoctoral Fellow (Laboratory of Dr.  
Marco Colombini)  
University of Maryland College Park  
Department of Biology  
College Park, MD  
Research Areas: mitochondrial bioenergetics, mitochondria-mediated  
apoptosis, sphingolipid-protein interactions

- 2000-2003 National Institutes of Health NRSA Pre-doctoral Research Fellow  
University of Maryland College Park, Department of Biology, College Park, MD  
Research Areas: membrane biophysics, ion channel structure and function
- 1999-2000 Graduate Teaching Assistant  
University of Maryland College Park, College of Chemical and Life Sciences, Department of Biology, College Park, MD  
Courses taught: Neurophysiology, Cell Physiology, Genetics, Principles of Biology
- 1998-2000 Faculty Research Assistant  
University of Maryland College Park, Department of Entomology, College Park, MD  
Research Areas: Nematology and Integrated Pest Management
- 1994-1998 Undergraduate Research Assistant  
University of Maryland College Park, Department of Cell Biology and Molecular Genetics, College Park, MD  
Research areas: Nematology and Plant Pathology

### **Honors:**

- 2008 Charleston Workshop in Light Microscopy, May 18-23<sup>rd</sup> 2008, \$500 scholarship
- 2007 Selected to attend the 15<sup>th</sup> Annual Barshop Institute Summer Training Course in Experimental Aging Research, June 16<sup>th</sup>-22<sup>nd</sup> 2007, San Antonio, TX
- 2006 Keystone Symposia Travel Award, \$1,000
- 2003 Biophysical Society Young Bioenergeticist Award \$250
- 2003 Graduate Student Research Achievement Award, University of Maryland College Park, Department of Biology, \$250
- 2003 One of 35 U.S. graduate students selected to attend the Annual Meeting of the Nobel Laureates in Landau, Germany
- 2002 Keystone Symposia Travel Award, \$1,000
- 2000 Graduate Teaching Assistant of the Year, University of Maryland
- 2000 Travel fellowship, Goldhaeber award, University of Maryland, \$500

### **Publications**

1. Guenther GG, Peralta ER, Romero KM, Wong SY, **Siskind LJ**, and Edinger AL. (2008) Ceramide starves cells to death by down-regulating nutrient transporter proteins. *Proceedings of the National Academy of Sciences of the United States of America*. In Press
2. **Siskind LJ**, Feinstein L, Yu T, Davis JS, Jones D, Choi J, Zuckerman JE, Tan W, Hill RB, Hardwick JM, Colombini M. (2008) Anti-apoptotic Bcl-2 family proteins disassemble ceramide channels. *Journal of Biological Chemistry* 283(11):6622-30
3. **Siskind LJ**, Kolesnick RN and Colombini M. (2006) Ceramide forms channels in mitochondrial outer membranes at physiologically relevant concentrations. *Mitochondrion*. 6(3):118-25.
4. **Siskind LJ**, Fluss S, Bui M and Colombini M. (2005) Sphingosine forms channels in membranes that differ greatly from those formed by ceramide. *Journal of Bioenergetics and Biomembranes*. 37(4): 227-236.
5. **Siskind LJ**, Davoody A, Lewin N, Marshall S and Colombini M. (2003) Enlargement and contracture of C<sub>2</sub>-ceramide channels. *Biophysical Journal* 85: 1560-1575.
6. **Siskind LJ**, Kolesnick RN and Colombini M. (2002) Ceramide channels increase the permeability of the mitochondrial outer membrane to small proteins. *Journal of Biological Chemistry* 277: 26796-26803
7. **Siskind LJ** and Colombini M. (2000) The lipids C<sub>2</sub>- and C<sub>16</sub>-ceramide form large stable channels in membranes: implications for apoptosis. *Journal of Biological Chemistry* 275: 39640-44.

#### **Review Article**

**Siskind L.J.** (2005) Mitochondrial ceramide and the induction of apoptosis. *Journal of Bioenergetics and Biomembranes* 37(3): 143-153.

#### **Papers In Preparation**

**Siskind LJ**, Romero, KM, Mullen, TD, Spassieva, S, Edinger, AI, and Obeid, LM (2008) Bak in control of ceramide generation during the induction phase of apoptosis. To be submitted to *EMBO J* in April 2009.

#### **Teaching Experience:**

2008 MUSC BMB 605A "Mechanisms of Aging and Lifespan" (BMB 605A), Taught section of course on caloric restriction. I received the highest scores on student evaluations of all participating instructors.

1999-2000 Graduate Research Assistant, University of Maryland College Park, College of Chemical and Life Sciences, Courses Taught: Neurophysiology, Cell Physiology, Principles of Genetics, and Principles of Biology

### **Professional Memberships:**

2001-present Biophysical Society Member, Bioenergetics subgroup member

2003-2007 American Society for Cell Biology Member

### **Session Chair and Organizer at International Conferences:**

Organized and Chaired Platform session at the 2006 Annual Biophysical Society Meeting entitled "Mitochondria and Apoptosis: Mechanisms for Protein Release." Salt Lake City, Utah

Organized and Chaired Platform session at the 2004 Annual Biophysical Society Meeting entitled "The Biophysics of Ceramide Signaling." Baltimore, MD.

### **Talks at National and/ or International Conferences:**

**Siskind LJ**, Mullen TD, Romero KM, Spassieva S, Edinger AL, and Obeid LM. (2009) Regulation of long-chain ceramide metabolism by the Bcl-2-antagonist/ killer (Bak) protein. Charleston Ceramide Conference. Charleston, SC

Invited Speaker: *Bcl-2 Proteins: Salon des Refusee*. Symposia at the 2007 Annual Biophysical Society Meeting. Talk entitled: Ceramide channel inhibition by anti-apoptotic Bcl-2 proteins.

Selected Speaker: *Mechanisms of Mitochondrial Outer Membrane Permeabilization 2006* Keystone Symposia entitled Metabolomics: From Bioenergetics to Apoptosis, Talk entitled: Ceramide Channels Regulate the Permeability of the Mitochondrial Outer Membrane to Proapoptotic Proteins.

**Siskind LJ**, Fluss S, Bui MP and Colombini M. (2005) Mitochondrial sphingolipids and the induction of apoptosis. *Biophys. J.* 946-Plat; Annual Biophysical Society meeting, Long Beach, CA.

**Siskind LJ** and Colombini M. (2004) Ceramide channels: a closer look. *Biophys. J.* 1009-Plat; Baltimore, MD

**Siskind LJ**, Davoody A, Lewin N, Marshall S, Kolesnick RN and Colombini M. (2003) Ceramide channels and apoptosis: channel characterization. 1565-Plat; Annual Biophysical Society meeting, San Antonio, TX.

**Siskind LJ**, Kolesnick RN and Colombini M. (2002) Ceramide forms dynamic channels in the mitochondrial outer membrane increasing its permeability to small proteins. *Biophys. J.* 82(1): 22; Annual Biophysical Society meeting, San Francisco, CA.

### **Posters**

**Siskind, LJ** and Obeid, LM (2008) Bax and/ or Bak are required for ceramide generation during the initiation phase of apoptosis in UVC-irradiated BMK cells. Keystone Symposia Cell Death and Cell Senescence, February 2008, Breckenridge CO

**Siskind LJ**, Yu T, Hill RB, Hardwick JM and Colombini M. (2007) Anti-apoptotic Bcl-2 proteins close ceramide channels. *Biophys. J.* 2718-Pos; Annual Biophysical Society Meeting, Baltimore, MD.

**Siskind LJ**, Yu T, Hill RB, Hardwick JM and Colombini M. (2007) Bcl-xL and CED-9 close ceramide channels. 4<sup>th</sup> International Charleston Ceramide Conference. Asilomar, CA.

**Siskind LJ**, O'Connell S, Stiban J and Colombini M. (2006) Ceramide channels regulate the permeability of the Mitochondrial Outer Membrane to Proapoptotic Proteins. Keystone Symposia: Metabolomics: From Bioenergetics to Apoptosis, Apr 2 - Apr 7, 2006, Snowbird, UT.

**Siskind LJ** and Colombini M. (2004) Ceramides form protein permeable channels in mitochondrial outer membranes at physiologically relevant concentrations. 13<sup>th</sup> European Bioenergetics Conference, Pisa, Italy

**Siskind LJ**, Fluss S, Bui M and Colombini M. (2004) Mitochondrial sphingolipids and the induction of apoptosis. American Society for Cell Biology 44<sup>th</sup> Annual Meeting, Washington, DC.

**Siskind LJ**, Davoody A, Kolesnick RN and Colombini, M. (2003) Calcium promotes the disassembly of ceramide channels. *Biophys. J.* 992-Pos; Annual Biophysical Society meeting, San Antonio, TX.

## **Research Support**

### **Current:**

NIH/NIA RO1-AG-16583 (PI-Obeid)

Mitochondrial Ceramide in Chemotherapy-induced Apoptosis

Projected: 9/01/2005-08/31/2010

Goal: (1) to determine mechanisms of ceramide generation and its regulation in mitochondria. (2) to determine the mechanisms by which mito-ceramides induce apoptosis. (3) to develop mito-ceramides as novel chemotherapeutic agents.

Role: Co-Investigator (PI-Obeid)

Pilot project: VAMC Research Enhancement Award Program (REAP)

Department of Veterans Affairs, BLRD Program

REAP Title -- *Inflammatory Mediators of Renal Disease*

*Pilot Project Title: Renal Cell Death*

Raymond/Gilkeson (Co-PIs) 07/01/98 – 12/31/09

Goal: This is a training grant that currently supports three fellows, and has supported eight renal fellows and a Rodent Physiology Core since its inception. These funds are available to eight qualifying VA investigators to support a total of three fellow trainees in renal research at any time. Dr. Siskind receive 5/8 VA salary support for the period of 9/14/08-12/01/08 to investigate the regulation of sphingolipid metabolism in the pathology of renal disease.

Role: Co-Investigator (Raymond/Gilkeson Co-PIs)

Veterans Administration Career Development Award- Level 2

Projected: 1/01/09-12/31/11

Application Accepted.

Role of Ceramide in Aging Related Diseases

Goal: to determine mechanisms of crosstalk between ceramide and Bcl-2 family proteins during renal cell death.

Role: Principal Investigator

**Completed:**

Abney Foundation Scholarship Award (MUSC Hollings Cancer Center)

07/01/2007-06/30/2008

*Mechanisms for mitochondrial ceramide generation and action: A potential target for the development of novel anti-cancer drugs*

Goal: The Abney Foundation Scholarship provides a small, one-year stipend to individuals wishing to perform studies involving basic cancer, translational or prevention control research.

It is open to medical students, graduate students or postdoctoral fellows.

Role: PI/Awardee

Pilot project: VAMC Research Enhancement Award Program (REAP)

Department of Veterans Affairs, BLRD Program

REAP Title -- *Inflammatory Mediators of Renal Disease*

*Pilot Project Title: Renal Cell Death*

Raymond/Gilkeson (Co-PIs) 07/01/98 – 12/31/09

Goal: This is a training grant that currently supports three fellows, and has supported eight renal fellows and a Rodent Physiology Core since its inception. These funds are available to eight qualifying VA investigators to support a total of three fellow trainees in renal research at any time. Dr. Siskind received support for a pilot project, 7/2007-9/2007

Role: Pilot Project PI

NIH NS42025-01A2

06/01/2003 to 11/30/2006

*Channel formation by ceramides: Implication on apoptosis*

Goal: Characterization of ceramide channels in mitochondria, liposomes, and planar phospholipid membranes as well as the regulation of ceramide channels by ceramide metabolites and anti-apoptotic Bcl-2 proteins.

Role: Co-Investigator (Marco Colombini-PI)

NIH NINDS Individual Ruth L. Kirschstein Pre-doctoral Fellowship

06/2000—5/2003

*Ceramide channel formation and its role in apoptosis*

Goal: This study involved the biophysical characterization of ceramide channels in planar phospholipid membranes and isolated mitochondria.

Role: PI/Awardee