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## BIOGRAPHICAL SKETCH

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NAME Martin S. Kluger, PhD	POSITION TITLE Research Scientist		
eRA COMMONS USER NAME MKLUGER			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
The Juilliard School	-	1969-1975	Music
Yale University, New Haven, CT	BA	1978	Liberal Arts; Music
Yale School of Music, New Haven, CT	MM	1980	Instrumental Music
University of Connecticut, Storrs, CT	MS	1989	Biochemistry
University of Connecticut, Storrs, CT	PhD	1994	Biochemistry
Yale School of Medicine, New Haven, CT	Post-Doc	1998	Vascular Biology and Immunobiology

### SECTION A. RESEARCH AND PROFESSIONAL EXPERIENCE

1984-1988	Faculty, Department of Music, University of Connecticut at Storrs
1989-1994	Graduate Student in Biochemistry, Lab of Jon Covault, MD, PhD, University of Conn. at Storrs
1989-1991	Graduate Teaching Assistant, Molecular and Cell Biology, University of Conn. at Storrs
1994-1998	Postdoctoral Fellow in Vascular Biology, Lab of Dr. Jordan Pober, MD, PhD, Yale Univ. School of Medicine
1994-1998	NIH Postdoctoral Fellow, Dermatology, Yale Univ. School of Medicine
1998-2007	Associate Research Scientist in Dermatology, Yale Univ. School of Medicine
2004-present	Faculty Member, Program in Vascular Biology and Therapeutics, Yale Univ. School Med.
2007-present	Research Scientist in Dermatology, Yale Univ. School of Medicine

### HONORS AND ACTIVITIES

1972	Eagle Scout Award
1976	Concerto Competition Winner, Yale College
1976; 1980	Tanglewood Fellowships, Boston Symphony Orchestra Berkshire Music Center
1978	Magna Cum Laude, Graduation with Honors, Yale College
1980-	Principal Timpanist, Springfield (MA) Symphony Orchestra
1991-1994	High Technology Scholar, State of Connecticut
1997	Pharmacia and Upjohn Research Fellowship, Dermatology Foundation
1998	Career Development Award, Dermatology Foundation
1999-2005	Co-Director, Cell Culture Core, Yale Skin Disease Research Center
2003-	Director, Dermatology Scientific Lecture Series, Dept. of Dermatology, Yale U. Sch of Med
2003-	Reviewer for Journal of Immunology, Journal of Investigative Dermatology, Journal of Vascular Research, U.S. Civilian Research & Development Foundation, European Journal of Cell Biology
2003-2004	Member (ad hoc) Immunology Study Section, U.S. Department of Veteran's Affairs
2005-	Director, Endothelial Cell Culture Core, Yale Skin Disease Research Center
2006	Patent PCT/GB2006/001313 "Selective modulation of Tumor Necrosis Factor Receptors in Therapy"
2006-	Yale Cancer Center, Immunology and Immunotherapy Program
2006	Cover Figure, Annual Report, Yale Program in Vascular Biology and Transplantation
2007	Cover Figure, April 2007 Issue, Journal of Investigative Dermatology
2007-	Co-President, Angiogenesis and Vascular Biology Symposium, Society for Investigative Dermatology Annual Meeting, Los Angeles, CA
2007-	Editorial Board, Journal of Investigative Dermatology

- 2008 Session Reviewer, Angiogenesis and Vascular Biology Abstracts, International Investigative Dermatology, Kyoto, Japan
- 2008-2010 Membership Committee, Society for Investigative Dermatology

## SECTION B. PEER-REVIEWED PUBLICATIONS

- Kluger, MS**, Johnson, DR and Pober, JS. Mechanism of sustained E-selectin expression in cultured human dermal microvascular endothelial cells. **Journal of Immunology**. 1997. 158:887-889.
- Zheng, L, Dengler, TJ, **Kluger, MS**, Madge, LA, Schechner, JS, Maher, SE, Pober, JS, and Bothwell, AL. Cytoprotection of human umbilical vein endothelial cells against apoptosis and CTL-mediated lysis provided by caspase-resistant bcl-2 without alterations in growth or activation responses **Journal of Immunology**. 2000. 164:4665-4671.
- Schechner, JS, Nath, AK, Zheng, L, **Kluger, MS**, Hughes, CC, Sierra-Honigmann, MR, Lorber, MI, Tellides, G, Kashgarian, M, Bothwell, AL and Pober, JS. In vivo formation of complex microvessels lined by human endothelial cells in an immunodeficient mouse. **Proceedings of the National Academy of Sciences of the United States of America**. 2000. 97:9191-9196.
- Gaeta, ML, Johnson, DR, **Kluger, MS** and Pober, JS. The death domain of tumor necrosis factor receptor 1 is necessary but not sufficient for Golgi retention of the receptor and mediates receptor desensitization. **Laboratory Investigation**. 2000. 80:1185-1194.
- Kluger, MS**, Shiao, SL, Bothwell, ALM, and Pober, JS. Cutting Edge: Internalization of transduced E-selectin by cultured human endothelial cells: comparison of dermal microvascular and umbilical vein cells and identification of a phosphoserine-type di-leucine motif. **Journal of Immunology**. 2002. 168:2091-2095.
- Li JH, **Kluger MS**, Madge LA, Zheng L, Bothwell AL, and Pober JS. Interferon-gamma augments CD95(APO-1/Fas) and pro-caspase-8 expression and sensitizes human vascular endothelial cells to CD95-mediated apoptosis. **American Journal of Pathology**. 2002. 161:1485-1495.
- Manes, T, Pober, JS and **Kluger, MS**. IP-10 Stimulates Rapid Transendothelial Migration of Human Effector but not Central Memory CD4<sup>+</sup> T Cells: Requirements for Shear Stress and Adhesion Molecules. **Transplantation**. 2006. 82: S9-S14.
- Ranjbaran H, Wang Y, Manes TD, Yakimov, AO, Akhtar, S, **Kluger, MS**, Pober, JS, Tellides, G. Heparin Displaces Interferon- $\gamma$ -Inducible Chemokines (IP-10, I-TAC, and Mig) Sequestered in the Vasculature and Inhibits the Transendothelial Migration and Arterial Recruitment of T Cells. **Circulation**. 2006. 114(12):1293-300.
- Gleissner, C. A., Zastrow, A., Klingenberg, R., **Kluger, M.S.**, Konstandin, M., Celik, S., Haemmerling, S., Shankar, V., Giese, T., Katus, H. A., and Dengler, T. J. IL-10 inhibits endothelium-dependent T cell costimulation by up-regulation of ILT3/4 in human vascular endothelial cells. **European Journal of Immunology**. 2007. 37:177-192.
- Clark, P.R., Manes, T.D., Pober, J.S. and **Kluger, M.S.** Increased ICAM-1 expression causes endothelial cell leakiness, cytoskeletal reorganization and junctional alterations. **Journal of Investigative Dermatology**. 2007. 127: 762-774.
- Clark, P.R., Pober, J.S. and **Kluger, M.S.** Knockdown of TNFR1 by the Sense Strand of an ICAM-1 siRNA: Dissection of an Off-Target Effect. **Nucleic Acids Research**. 2008, 36:1081-1097.

Liu, M., **Kluger, M.S.**, D'Alessio, A., García-Cardena, G. Pober, J.S. Regulation of Arterial-Venous Differences in Tumor Necrosis Factor Responsiveness of Endothelial Cells by Anatomic Context. **American Journal of Pathology**. 2008. 172(4):1088-1099.

Madge, L.A., **Kluger, M.S.** and May, M.J. Lymphotoxin- $\alpha$ 1 $\beta$ 2 and Light Induce Classical and Non-Canonical NF- $\kappa$ B-dependent Pro-Inflammatory Gene Expression in Vascular Endothelial Cells. **Journal of Immunology**. 2008. 180:3467-3477.

#### INVITED REVIEWS

Pober, JS, **Kluger, MS** and Schechner, JS (2001) T cell homing to skin and endothelial cell presentation of antigen. In **Cutaneous T Cell Lymphoma: Basic and Clinically Relevant Biology** (Ed. Richard Edelson and Vincent T. DeVita) *Annals of the New York Academy of Sciences*, Vol. 941, pp. 12-25.

**Kluger, MS** (2004) Vascular Endothelial Cell Adhesion and Signaling during Leukocyte Recruitment. In **Advances in Dermatology**, (Invited review, Ed., Sam Hwang) Vol. 20, pp. 163-201, N.Y., Elsevier.

#### SECTION C. Ongoing Research Support.

**2 P30 AR041942-11** (Tigelaar, R, PI; **Kluger, MS, Co-Investigator; Endothelial Cell Core Director**)  
9/30/92-3/31/09

NIAMS

*Yale Skin Disease Research Center (YSDRC) Cell Culture Core (CCC)*

The goal of the YSDRC is to create an environment that amplifies understanding of basic cutaneous biology and a broad variety of skin diseases. The goal of the Endothelial Cell Culture Core is to produce and dispense advice on human dermal microvascular EC cultures for experimental use by Yale and non-Yale investigators.

**NO1-HV28186** (Williams, K, PI; **Kluger, MS, Staff Scientist**)  
NIH-NHLBI  
*National Heart, Lung and Blood Institute Proteomics Initiative*  
9/30/02-9/29/09

This contract is to develop a proteomics center at Yale. The goal of Project B6 is to utilize cell permeable peptides to inhibit intracellular trafficking of signaling and adhesion molecules in vascular endothelial cells.

**R01-HL036003** (Pober, J.S., PI; **Kluger, MS, Co-Investigator**)  
NIH-NHLBI  
*Proteins of the Endothelial Cell Surface*  
4/01/08-03/31/12

Goals: To elucidate the basis of the differences in pro-inflammatory TNF responses of EC in arteries vs. veins focusing on differences in the transcriptional control of E-selectin expression; To elucidate the molecular basis of regulated expression of TNFRs on EC caused by hypoxia and reoxygenation, a model of ischemia/reperfusion injury; To characterize the role of caveolae and/or lipid rafts in coupling TNFR1-initiated signaling to the activation of PI-3 kinase/PDK/Akt and to Rs/Raf/ERKK-1,2 and in regulating TNF-induced receptor internalization; To elucidate the mechanisms by which TNF causes changes in trans-EC permeability to macromolecules, focusing on the paracellular pathway and alterations in tight and adherens junction protein expression and organization.

**RO1-HL51014** (Pober, JS PI; **Kluger, MS, Co-Investigator**)

1/01/06 – 12/31/10

NIH NHLBI

*Alloimmunity to Progenitor Cell-Derived Human Vascular Cells*

The goal is to study the human alloimmune T cell response to endothelial cells and smooth muscle cells derived from circulating stem cells, using cell culture and humanized mouse models.

**RO1-HL62188** (Pober, JS, PI; **Kluger, MS, Co-Investigator**)

7/1/05 – 6/30/10

NHLBI

*Human CTL-Mediated Injury of Graft Endothelial Cells.*

The overall goal of this project is to elucidate the interactions between human cytolytic T lymphocytes and allogeneic vascular endothelial cells.

#### **COMPLETED SUPPORT (LAST THREE YEARS)**

**1 P50 CA121974-02**

NCI Yale SPORE in Skin Cancer (Halaban, R, PI)

7/1/06-6/30/11

Developmental Research Project (**Kluger, MS, PI**)

7/01/06-6/30/07

*Melanoma-Induced Dermal Vascular Hyperpermeability in Humans: Two New Models*

Our hypothesis is that melanoma cells release VEGF and other factors that induce vascular leak across interendothelial cell tight junctions. We developed two experimental models for identifying and characterizing the cellular machinery and molecular mechanisms of tumor vessel hyperpermeability.

**Yale-Boehringer-Ingelheim Pharmaceuticals Inc. Research Alliance**

9/01/06-08/31/08

Established Project (Pober, J.S., Yale P.I., **Kluger, M.S., Consultant**)

*MEK5 signaling in Vascular and Cardiac Cells*

The goal was to study the mechanisms and effects of MEK5 signaling in vascular and cardiac cells.