

**Marcus P. Cooper, MD**

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**EDUCATION**

JOHNS HOPKINS SCHOOL OF MEDICINE (Baltimore, MD) Alpha Omega  
Alpha, M.D., 8/92-5/99.

BELMONT COLLEGE (Nashville, TN) Magna Cum Laude, B.S. in Biology, 6/90.

N.G.M. MAJOR HIGH SCHOOL (Long Island, Bahamas) N.G.M. Book Award, 6/86

**PROFESSIONAL TRAINING INTERNSHIP AND RESIDENCY**

Osler Medical Service Department of  
Medicine (Baltimore, MD) Johns Hopkins  
Hospital, Johns Hopkins University School  
of Medicine Edward L Benz Jr., M.D.,  
*Chairman, Department of internal  
Medicine* David B. Hellmann, M.D.,  
*Director, Internship and Residency  
Training Program*  
7/99-6/01

**FELLOWSHIPS**

Division of Cardiovascular Medicine  
Brigham and Women's Hospital,  
Peter B. Libby, M.D., *Chairman, Division of  
Cardiovascular Medicine*  
James Fang, M.D., *Director, Cardiovascular  
Fellowship Training Program*  
7/01-5/05

**APPOINTMENTS**

ASSISTANT PROFESSOR OF MEDICINE  
Division of Cardiovascular Medicine  
University of Massachusetts School of Medicine/UMass Memorial Medical Center  
Biotech V, Suite 200  
381 Plantation Street  
Boston, MA 01605  
7/21/2008-present

INSTRUCTOR IN MEDICINE AT BRIGHAM  
AND WOMEN'S HOSPITAL AND CELL  
BIOLOGY AT HARVARD MEDICAL SCHOOL  
Department of Cancer Biology  
Dana-Farber Cancer Institute  
One Jimmy Fund Way  
Smith Building, Room 952  
Boston, MA 02115  
5/05-7/08

GRADUATE ASSISTANT  
Massachusetts General Hospital  
Department of Internal Medicine  
Boston, MA 02114  
10/06-7/08

### **HONORS AND AWARDS**

Alpha Omega Alpha (1999)  
Phi Beta Kappa (1999)  
Four Schools Physician-Scientist Program, (1999)  
Magna Cum Laude (1990)  
Who's Who Among American College Students (1990)  
Outstanding Biology Senior Award (1990)  
Alpha Chi Honor Society (1988)  
Freshman Chemistry Award (1987)  
Tri-Beta Biological Honor Society (1987)  
N.G.M. Major Book Award (1986)

### **RESEARCH EXPERIENCE**

DIVISION OF CARDIOVASCULAR MEDICINE (University of Massachusetts Medical School) As an Assistant Professor of Medicine, the laboratory endeavors to discern and manipulate transcriptional pathways that reduce obesity. Notably, we are investigating the metabolic role of LRP130 in models of obesity and characterizing the PGC-1 $\alpha$  complex to better understand metabolic pathways. (July 2008-Present).

DEPARTMENT OF CANCER BIOLOGY (Dana Farber Cancer Institute) Under Dr Bruce Spiegelman as an Instructor in Medicine. Investigated the PPAR gamma coactivator 1 (PGC1- $\alpha$ ) complex utilizing a novel method for protein-protein chromatography. Identified LRP130 as novel metabolic regulator hepatic gluconeogenesis and brown fat development through the PGC-1 coactivators. (August 2003-July 2008).

LABORATORY OF MOLECULAR GENETICS (National Institute of Aging at NIH) Under Dr. Vilhelm A. Bohr as a Four Schools Scholar. Devised a novel method for protein-protein affinity chromatography to identify proteins that interact with the Werner protein. Discovered that the Werner protein interacts both physically and functionally with the Ku, 70/80 heterodimer. (July 1998 to 6/99).

LABORATORY OF MOLECULAR GENETICS (National Institute of Aging at NIH) Under Dr. Vilhelm A. Bohr as a NIH researcher. Investigated the role of the protein p21 in nucleotide excision repair using an *in vitro* and *in vivo* cell model. (June 1995 to March 1997).

DIVISION OF CARDIOLOGY (Johns Hopkins University School of Medicine) Under Dr. Pascal J. Goldschmidt-Clermont Investigated the half-life of human profilin and methods for the down regulating profilin in transformed cell lines. (Summer 1992).

COMPREHENSIVE SICKLE CELL CENTER (Meharry Medical College) Under Drs. Pilar del Aguinaga and Ernest A. Turner. Established improved molecular techniques to provide genetic

counseling and treatment of hemoglobinopathies common to the growing Southeast Asian community in Middle Tennessee. (January 1991 to July 1992).

DEPARTMENT OF MOLECULAR PHYSIOLOGY AND BIOPHYSICS (Vanderbilt University) Under Dr. T. Weil. Investigated the effects of mutations in the transcription factor, TFIID. (May 1990 to December 1990).

## BIBLIOGRAPHY

**Cooper MP**, Uldry M, Arany Z, Spiegelman M. Modulation of PGC-1 coactivator pathways in brown fat differentiation through LRP130. Under review 2008.

Shingo Kajimura, Patrick Seale, Takuya Tomaru, Hediye Erdjument-Bromage, **Marcus P. Cooper**, Jorge L. Ruas, Sherry Chin, Paul Tempst, Mitchell A. Lazar, and Bruce M. Spiegelman. Regulation of the Brown and White Fat Gene Programs through a PRDM16/CtBP Transcriptional Complex, *Genes and Development*. Accepted for publication.

Arany Z, Foo SY, Ma Y, Ruas JL, Bommi-Reddy A, Girnun G, **Cooper M**, Laznik D, Chinsomboon J, Rangwala SM, Baek KH, Rosenzweig A, Spiegelman BM. HIF-independent regulation of VEGF and angiogenesis by the transcriptional coactivator PGC-1alpha. *Nature*. 2008 Feb 21;451(7181):1008-12.

**Cooper MP**, Lishu Qu, Lindsay M. Rohas, Jiandie Lin, Wenli Yang, Hediye Erdjument-Bromage, Paul Tempst, Bruce M. Spiegelman. Defects in energy homeostasis in Leigh Syndrome French Canadian Variant through PGC-1alpha/LRP130 complex. *Genes & Development* 2006 Nov 1;20(21):2996-3009

Rhee J, Ge H, Yang W, Fan M, Handschin C, **Cooper M**, Lin J, Li C, Spiegelman BM. Partnership of PGC-1alpha and HNF4alpha in the regulation of lipoprotein metabolism. *J Biol Chem*. 2006 May 26;281(21):14683-90.

Lin J, Wu PH, Tarr PT, Lindenberg KS, St-Pierre J, Zhang CY, Mootha VK, Jager S, Vianna CR, Reznick RM, Cui L, Manieri M, Donovan MX, Wu Z, **Cooper MP**, Fan MC, Rohas LM, Zavacki AM, Cinti S, Shulman GI, Lowell BB, Krainc D, Spiegelman BM. Defects in adaptive energy metabolism with CNS-linked hyperactivity in PGC-1alpha null mice. *Cell*, 2004 Oct 1;119(1):121-35

Orren DK, Machwe A, Karmakar P, Piotrowski J, **Cooper MP**, Bohr VA. A functional interaction of Ku with Werner exonuclease facilitates digestion of damaged DNA. *Nucleic Acids Research*, 2001;29:1926-1934.

Bohr VA, **Cooper M**, Orren D, Machwe A, Piotrowski J, Sommers J, Karmakar P, Brosh R Werner syndrome protein: biochemical properties and functional interactions. *Experimental Gerontology*, 2000;35:695-702.

Brosh RM Jr, Li JL, Kenny MK, Karow JK, **Cooper MP**, Kurekattil RP, Hickson ID, Bohr VA. Replication protein A physically interacts with the Bloom's syndrome protein and stimulates its helicase activity. *Journal of Biological Chemistry*, 2000;275:23500-8.

**Cooper MP**, Machwe A, Orren DK, Brosh RM, Bohr VA. Ku complex interacts with Werner protein and stimulates its exonuclease activity. *Genes and Development*, 2000;14:907-12.

**Cooper MP**, Balajee AS, Bohr VA The C-terminal domain of p21 inhibits nucleotide excision repair in vitro and in vivo. *Molecular Biology of the Cell*, 1999; 10:2119-2129.

ACTIVE RESEARCH SUPPORT  
NIH 1 K08 DK071017-04  
Cooper, Marcus P., PI

## Functional Analysis of PGC-1 $\alpha$ holo-complex in Diabetes