



## **Wei Shen, MD MPH MS**

*Assistant Professor of Nutritional Medicine at Columbia University Medical Campus*

### **Research Summary:**

*I am the Director of the Image Analysis Laboratory and the Associate Director of the Human Phenotyping Core at the New York Obesity Nutrition Research Center. I have a broad background in body composition and obesity research, with specific training and expertise in MRI and computed tomography (CT) analysis. My contribution to science include:*

1. *The first to propose an adipose tissue classification system for imaging method and this system have been widely adopted. I also validated geometrical models for adipose tissue quantification and clarified adipose tissue distribution pattern changes across lifespan in different ethnic and gender groups.*
2. *Established single slice location that best estimate total visceral adipose tissue, adipose tissue, muscle, and cardiovascular disease risks. Thoroughly investigated the pros and cons of single slice imaging versus multi-slice MRI including cost-effectiveness evaluation and cross-sectional vs. longitudinal study comparisons.*
3. *Pioneered in developing and optimizing MRI and MRS methods in measuring innovative adipose tissue depots in human; and evaluated measurement errors incurred by MRI and MRS protocol.*
4. *Established the comprehensive human evidence of the competitive relationship between marrow fat and bone (i.e., cortical bone and cancellous bone) across life span, and in different ethnic and gender groups.*
5. *Played a critical role in clarifying body composition changes in multiple diseases conditions, especially using MRI technology.*

*My ongoing R01 uses MRI to evaluate the role of organ size change in adaptive thermogenesis in long term caloric restriction. I have collaborated extensively with clinical investigators to clarify the role of body composition in disease conditions.*

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### **Selected Publications:**

**Shen W**, Velasquez G, Chen J, Jin Y, Heymsfield SB, Gallagher D, Pi-Sunyer X. Comparison of the Relationship between Bone Marrow Adipose Tissue and Volumetric Bone Mineral Density in Children and Adults. *J Clin Densitom*. 2014 Jan-Mar;17(1):163-9. (PMCID: PMC3770790)

**Shen W**, Gong X, Weiss J, Jin Y. Comparison among T1-weighted magnetic resonance imaging, modified dixon method, and magnetic resonance spectroscopy in measuring bone marrow fat. *J Obes*. 2013:298675. (PMCID: PMC3628209)

**Shen W**, Scherzer R, Gantz M, Chen J, Punyanitya M, Lewis CE, Grunfeld C; Relationship between MRI-Measured Bone Marrow Adipose Tissue and Hip and Spine Bone Mineral Density in African American and Caucasian Participants: the CARDIA Study. *Journal of Clinical Endocrinology and Metabolism* 2012 Apr;97(4):1337-46. (PMCID: PMC3339890)

**Shen W**, Chen J, Gantz M, Velasquez G, Punyanitya M, Heymsfield SB, A Single MRI Slice Does Not Accurately Predict Visceral and Subcutaneous Adipose Tissue Changes During Weight Loss *Obesity* 2012;20(12):2458-63 (PMCID: PMC3466347)

Geer EB, **Shen W**, Strohmayer E, Kalmon D, Post KD, Freda PU. Body composition and cardiovascular risk markers after remission of Cushing's Disease: A prospective study using whole-body MRI *Journal of Clinical Endocrinology and Metabolism* 2012 May;97(5):1702-11 2012 Mar 14. [Epub ahead of print] (PMCID: PMC3339890)

Scherzer R, **Shen W**, Heymsfield SB, Lewis CE, Kotler D, Punyanitya M, Bacchetti P, Shlipak MG, Grunfeld C; Study of Fat Redistribution Metabolic Change in HIV Infection. Intermuscular adipose tissue and metabolic associations in HIV infection. *Obesity* 2011 Feb;19(2):283-91. Epub 2010 Jun 10. (PMCID: PMC3731045)

Freda PU, **Shen W**, Reyes CM, Geer EB, Arias-Mendoza F, Gallagher D, Heymsfield SB. Skeletal Muscle Mass in Acromegaly Assessed by Magnetic Resonance Imaging and Dual

Photon X-ray Absorptiometry *Journal of Clinical Endocrinology and Metabolism* 2009 Aug;94(8):2880-6. 2009 Jun 2. (PMC2730874)

Leibel N, **Shen W**, Mao X, Punyanita M, Gallagher D, Horlick M, Shungu DC, Oberfield SE. Body Composition in Premature Adrenarche by Structural MRI, 1H MRS and DXA *Journal of Pediatric Endocrinology and Metabolism*. 2009 Apr;22(4):301-7. (PMC2873039)

**Shen W**, Punyanitya M, Silva AM, Chen J, Gallagher D, Sardinha LB, Allison DB, Heymsfield SB. Sexual dimorphism of adipose tissue distribution across the lifespan: a cross-sectional whole-body magnetic resonance imaging study. *Nutrition & Metabolism* 2009; 6:17 (PMC2678136)

voxel 1H MRS Measurements of Intramyocellular Lipid in Overweight and Lean Subjects under Conditions of Controlled Dietary Calorie and Fat Intake *NMR in biomedicine*2008;21:498-506. (PMC2892914)

**Shen W**, Punyanitya M, Wang ZM, Gallagher D, St-Onge MP, Albu J, Heymsfield SB, Heshka S Visceral Adipose Tissue: Relationships Between Single Slice Areas and Total Volume *American Journal of Clinical Nutrition*2004 Aug;80:271-8 (PMC2040041)

**Shen W**, Punyanitya M, Wang Z, Gallagher D, St-Onge MP, Albu J, Heymsfield SB, Heshka S. Total Body Skeletal Muscle and Adipose Tissue Volumes: Estimation from a Single Abdominal Cross-Sectional Image. *Journal of Applied Physiology*2004;97: 2333-2338 (PMID: 15310748)

**Shen W**, Mao X, Wolper C, Heshka S, Dashnaw S, Hirsch J, Heymsfield SB, Shungu DC. Reproducibility of Single- and Multi-

#### **More about Wei Shen:**

[Complete List of Published Work in PubMed My Bibliography \(a total of 66 peer-reviewed publications\):](#)

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