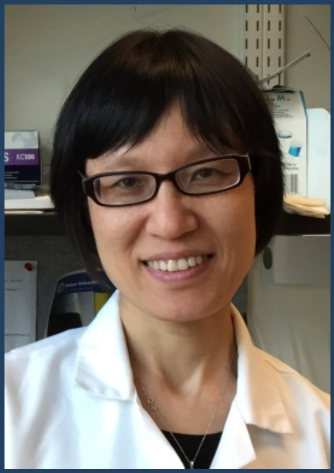
Yiying Zhang, PhD

Research Scientist



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Research Summary:

Dr. Zhang's scientific interests fall into the areas of molecular physiology of leptin and adipose tissue. Her work in these areas began with the positional cloning of leptin, an adipocyte-derived hormone that plays a paramount role in energy homeostasis. Dr. Zhang studied extensively the regulation of leptin gene expression in relation to adipocyte size, anatomic location, obesity and aging. Her laboratory continues to work on the molecular mechanisms underpinning the critical relationship of plasma leptin level to the short and long term energy balance status. These are key unresolved questions in the biology of leptin and their elucidation could provide novel therapeutic approaches to obesity. Another major research project in her laboratory concerns molecular and cellular pathways involved in the post-translational processing of the leptin receptor. The work in this area may lead to the identification of new modulators of leptin receptor function and possible new therapeutic approaches to obesity. Dr. Zhang's laboratory also has a long standing interested in adipose tissue function and biogenesis in relation to energy balance and metabolism, particularly sex and depot-related regulations of adipocyte biogenesis and their metabolic characteristics. Her laboratory has developed a preadipocyte transplantation system, which is particularly useful for studying adipocyte biogenesis and cell-autonomous function of adipocyte in physiological condition. Dr. Zhang has been serving as a co-director of the adipose tissue core, New York Obesity Nutrition Research Center sine 2007.

Selected Publications:

1. Zhang Y, Zitsman JL, Hou J, Fennoy I, Guo K, Feinberg J, Leibel RL (2014) Fat cell size and adipokine expression in relation to gender, depot and metabolic risk factors in

morbidly obese adolescents. Obesity 22:691-7.

2. Morabito MV, Berman DE, Schneider RT, Zhang Y, Leibel RL, Small SA (2014). Hyperleucinemia causes hippocampal retromer deficiency linking diabetes to Alzheimer’s disease. Neurobiology of Diseases 65:188-92.
3. Gan L, Guo K, Cremona ML, McGraw TE, Leibel RL, Zhang Y (2012) TNF-alpha up-regulates protein level and cell surface expression of the leptin receptor by stimulating its export via a PKC-dependent mechanism. Endocrinology 153:5821-5833.
4. Qiang L, Wang L, Kon N, Zhao W, Lee S, Zhang Y, Rosenbaum M, Zhao Y, Gu W, Farmer SR, Accili D (2012) Brown remodeling of white adipose tissue by SirT1-dependent deacetylation of Ppargamma. Cell 150:620-632.
5. Guo K, Yu YH, Hou J, Zhang Y (2010). Leucine supplementation improves glucose metabolism in etiologically distinct mouse models of obesity and diabetes mellitus. Nutr Metabo (Lond) 7:57-66.
6. Guo K, Mogen J, Struzzi S, Zhang Y (2009) Preadipocyte transplantation: an in vivo study of direct leptin signaling on adipocyte morphogenesis and cell size. Am J Physiol Regul Integr Comp Physiol 296:R1339-1347.
7. Guo K, McMinn JE, Ludwig T, Yu YH, Yang G, Chen L, Loh D, Li C, Chua S, Zhang Y (2007) Disruption of Peripheral Leptin Signaling in Mice Results in Hyperleptinemia without Associated Metabolic Abnormalities. Endocrinology. 148:3987-3997.
8. Liu L, Zhang Y, Chen N, Shi X, Tsang B, Yu YH (2007) Upregulation of myocellular DGAT1 augments triglyceride synthesis in skeletal muscle and protects against fat-induced insulin resistance. J Clin Invest. 117:1679-1689.
9. Zhang Y, Guo K, LeBlanc RE, Loh D, Schwartz GJ, Yu YH (2007) Increasing dietary leucine intake reduces diet-induced obesity and improves glucose and cholesterol metabolism in mice via multimechanisms. Diabetes. 56:1647-1654.
10. de Luca C, Kowalski TJ, Zhang Y, Elmquist JK, Lee C, Kilimann MW, Ludwig T, Liu S, Chua SC (2005) Complete rescue of obesity, diabetes, and infertility in db/db mice by neuron-specific LEPR-B transgenes. J Clin Invest. 115:3484-3493.
11. Guo KY, Halo P, Leibel RL, Zhang Y (2004) Effects of obesity on the relationship of leptin mRNA expression and

adipocyte size in anatomically distinct fat depots in mice. Am J Physiol Regul Integr Comp Physiol 287:R112-119.

12. Zhang Y, Guo KY, Diaz PA, Heo M, Leibel RL (2002) Determinants of leptin gene expression in fat depots of lean mice. Am J Physiol Regul Integr Comp Physiol 282:R226-R234.

13. Chua SC, Jr., Chung WK, Wu-Peng XS, Zhang Y, Liu SM, Tartaglia L, Leibel RL (1996) Phenotypes of mouse diabetes and rat fatty due to mutations in the OB (leptin) receptor. Science 271:994-996.

14. Maffei M, Halaas J, Ravussin E, Pratley RE, Lee GH, Zhang Y, Fei H, Kim S, Lallone R, Ranganathan S, Kern P, Friedman JM (1995) Leptin levels in human and rodent: measurement of plasma leptin and ob RNA in obese and weight-reduced subjects. Nat Med 1:1155-1161.

15. Zhang Y, Proenca R, Maffei M, Barone M, Leopold L, Friedman JM (1994) Positional cloning of the mouse obese gene and its human homologue. Nature 372:425-432.

More about Yiying Zhang, PhD:

http://www.nbdiabetes.org/research/our-basic-diabetes-research

Complete List of Published Work in MyBibliography:

http://www.ncbi.nlm.nih.gov/sites/myncbi/1rkdjx37PB1kV/bibliography/47725233/public/?sort=date&direction=descending