Guang William Wong, Ph.D.

Titles & Department

Professor of Physiology

Specialization Area

Metabolic homeostasis, function of adipose-and skeletal muscle-derived hormones, and mechanisms of insulin resistance and type 2 diabetes.

Unmet Need

The research addresses understanding the underlying role of hormones in the pursuit of improving treatments for obesity, diabetes, and fatty liver disease.

Summary of Research & Work

Dr. Wong's is interested in understanding how various organs in the body coordinate the complex metabolic networks and circuitry to maintain proper energy balance. Specifically, his lab focuses on characterizing a novel family of endocrine mediators secreted by adipose tissue. His current efforts are centered on addressing how fat and muscle-derived secretory proteins (adipokines and myokines), identified in his lab, regulate tissue crosstalk and signaling pathways to control energy metabolism. He uses genetic approaches such as gain and loss-of-function mouse models, and cell model systems, to address the function of hormones in physiological and pathophysiological context.

Value Proposition

- Treatments for insulin resistance that improves both IR and comorbidities.
- Identification of novel targets for combatting obesity.
- Development of highly efficacious and low off-target treatments for fatty liver disease.

Recent Publications

- Sarver DC, Xu C, Velez LM, Aja S, Jaffe AE, Seldin MM, Reeves RH, Wong GW. Dysregulated systemic metabolism in a Down syndrome mouse model. Mol Metab. 2023 Feb;68:101666.
- Yu H, Zhang Z, Li G, Feng Y, Xian L, Bakhsh F, Xu D, Xu C, Vong T, Wu B, Selaru FM, Wan F, Donowitz M, Wong GW. Adipokine C1q/Tumor Necrosis Factor- Related Protein 3 (CTRP3) Attenuates Intestinal Inflammation Via Sirtuin 1/NF-κB Signaling. Cell Mol Gastroenterol Hepatol. 2022 Dec 30.
- ct Sarver DC, Xu C, Carreno D, Arking A, Terrillion CE, Aja S, Wong GW. CTRP11 contributes modestly to systemic metabolism and energy balance. FASEB J. 2022 Jun;36(6):e22347.
- Sarver DC, Stewart AN, Rodriguez S, Little HC, Aja S, Wong GW. Loss of CTRP4 alters adiposity and food intake behaviors in obese mice. Am J Physiol (Endo). 2020;319:E1084-E1100

- Stewart AN, Little HC, Clark DJ, Zhang H, Wong GW. Protein modifications critical for myonectin/erythroferrone secretion and oligomer assembly. Biochemistry. 2020; 59:2684-2697
- Seldin MM, Peterson JM, Byerly MS, Wei Z, Wong GW. Myonectin (CTRP15), a novel myokine that links skeletal muscle to systemic lipid homeostasis. J Biol Chem. 2012 Apr 6;287(15):11968-80.
- Peterson JM, Wei Z, Wong GW. C1q/TNF-related protein-3 (CTRP3), a novel adipokine that regulates hepatic glucose output. J Biol Chem. 2010 Dec 17;285(51):39691-701.
- Wong GW, Krawczyk SA, Kitidis C, Ge G, Hug C, Spooner E, Gimeno R, and Lodish HF. Identification and functional characterization of CTRP9, a novel secreted glycoprotein from adipose tissue, that reduces serum glucose in obese mice and forms heterotrimers with adiponectin. FASEB J. 2009; 23:241-58.
- Wong GW, Wang J, Hug C, Tsao T-S, and Lodish HF. A family of Acrp30/adiponectin structural and functional paralogs. Proc Natl Acad Sci U S A. 2004; 101:10302-10307.

Awards & Honors

- 2015 Recipient of Johns Hopkins Catalyst Award
- 2009 Scientist Development Grant - American Heart Association
- 2004-07 National Research Service Award, NIH
- 2004 Travel fellowship, Human Genome Organization (HUGO)
- 2000 Pharmacia Allergy Research Award (Sweden)
- 1992 Howard Hughes Undergraduate Investigator Award