

第741回獣医学研究科談話会

日時：平成28年3月30日（水） 15:00～16:30

場所：北海道大学 大学院獣医学研究科 第2講義室

演者：篠田幸作先生 (University of California)

演題：『The Big Data-Driven Adipocyte Biology -How to Use Omics Data to Find Targets, Identify Functions, and Reveal Molecular Mechanisms-』

内容：

Brown adipose tissue (BAT) is a heat-generating (thermogenic) organ and has a remarkable capacity to dissipate energy. High levels of BAT activity protect animals against many of the harmful effects of a high fat diet, including obesity and insulin resistance. In humans, BAT activity levels also correlate with reduced adiposity, and stimulating BAT by cold or food ingredients promotes weight loss (Saito, 2014; Yoneshiro and Saito, 2015). Thus, elucidating the pathways that regulate BAT development may reveal new approaches to treat metabolic diseases. Bioinformatics analyses of large-scale data, such as RNA-Seq, ChIP-Seq, proteomics, and metabolomics are indispensable for current BAT research to identify genes, post-translational modifications, and small molecules that regulate BAT functions and to reveal the molecular signatures. In this seminar, I aim to present our recent applications of RNA-Seq (Shinoda et al., 2015a) and phosphoproteomics (Shinoda et al., 2015b) in the molecular control of brown adipocyte development and discuss emerging questions.

Saito, M. (2014). Human brown adipose tissue: regulation and anti-obesity potential. *Endocr J* 61, 409-416.

Shinoda, K., Luijten, I.H., Hasegawa, Y., Hong, H., Sonne, S.B., Kim, M., Xue, R., Chondronikola, M., Cypess, A.M., Tseng, Y.H., et al. (2015a). Genetic and functional characterization of clonally derived adult human brown adipocytes. *Nat Med* 21, 389-394.

Shinoda, K., Ohyama, K., Hasegawa, Y., Chang, H.Y., Ogura, M., Sato, A., Hong, H., Hosono, T., Sharp, L.Z., Scheel, D.W., et al. (2015b). Phosphoproteomics Identifies CK2 as a Negative Regulator of Beige Adipocyte Thermogenesis and Energy Expenditure. *Cell Metab* 22, 997-1008.

Yoneshiro, T., and Saito, M. (2015). Activation and recruitment of brown adipose tissue as anti-obesity regimens in humans. *Ann Med* 47, 133-141.

共催：日本生化学会北海道支部

連絡先：北海道大学 大学院獣医学研究科 生化学教室

木村 和弘 (011-706-5204)、岡松 優子(011-706-5205)