

GRK 2576 Guest Lecture

Title: Metabolic energy sensor AMPK:
old and new insights/applications

Speaker: Prof. Kei Sakamoto, PhD

Vice Executive Director and Professor of Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen, Denmark

Date: 12. October 2022

Time: 14:00 h CET

Location: Oskar Minkowski-Saal & Paul Langerhans-Saal, DDZ
(limited for current GRK2576 vivid doctoral students)

Biography



Kei Sakamoto is the Vice Executive Director and Professor of Novo Nordisk Foundation Center for Basic Metabolic Research, University of Copenhagen. Prior to this role, Kei was the Head of Metabolic Health Department at the Nestlé Institute of Health Sciences in Lausanne, Switzerland. Before that Kei was Programme Leader at the MRC Protein Phosphorylation Unit in Dundee, Scotland. His research is focused on elucidating key molecular mechanisms that control glucose and energy homeostasis associated with exercise, insulin resistance and type 2 diabetes. He made several discoveries using unique biochemical/genetic approaches and identified key regulatory processes in control of insulin-dependent/independent glucose uptake and glycogen synthesis in skeletal muscle, as well as gluconeogenesis in the liver. The ultimate aim of his lab is to identify and validate molecular candidates and small molecules/natural bioactives to prevent or treat insulin resistance.

He has received several awards, for examples from the American Physiological Society, the Society for Experimental Biology and Medicine, and the American College of Sports Medicine.

For your information, please see <https://cbmr.ku.dk/research/nutrient-and-metabolite-sensing/sakamoto-group/> and follow him at Twitter @Kei__Sakamoto

Selected recent publications

Natural (dihydro)phenanthrene plant compounds are direct activators of AMPK through its allosteric drug and metabolite-binding site. Sanders MJ, Ratinaud Y, Neopane K, Bonhoure N, Day EA, Ciclet O, Lassueur S, Naranjo Pinta M, Deak M, Brinon B, Christen S, Steinberg GR, Barron D, **Sakamoto K**. J Biol Chem. 2022 May;298(5):101852. doi: 10.1016/j.jbc.2022.101852.

Metformin reduces liver glucose production by inhibition of fructose-1-6-bisphosphatase. Hunter RW, Hughey CC, Lantier L, Sundelin EI, Peggie M, Zeqiraj E, Sicheri F, Jessen N, Wasserman DH, **Sakamoto K**. Nat Med. 2018 Sep;24(9):1395-1406. doi: 10.1038/s41591-018-0159-7.

***Information on access:** please visit <https://www.vivid.hhu.de/qualification-program/guest-lectures> Contact: Dr. Nicole Rockel, +49-211-3382-558, vivid@hhu.de

Talk teaser

Guest lecture with Prof. Dr. Kei Sakamoto

Metabolic energy sensor AMPK: old and new insights/applications

Cellular energy sensing is a crucial component of an organism's ability to match changes in energy demand with fuel supply. The AMP-activated protein kinase (AMPK) is a highly conserved key cellular energy sensor that is activated by low energy conditions and phosphorylates a wide range of substrates, including key metabolic proteins and transcription factors, in order to restore energy homeostasis.

AMPK is an attractive drug target for metabolic disorders such as insulin resistance and type 2 diabetes and major efforts have been taken by numerous pharmaceutical industries. This lecture will cover historical background/development of the AMPK field and discuss current challenges and opportunities for AMPK research and application/translation related to glucose homeostasis.