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# School of Life Sciences
# Seminar Series

**Thursday**
**4:00 PM**

**19 November**

**This seminar will be held in the manner of online and offline both.**

Offline: Jukhyun Bio Auditorium (RM.121)

Online: Zoom ID 315 451 8934 (Password: 101320)

## Homeostatic Roles of Primary Cilia in the Ventromedial Hypothalamus


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**소속** Yonsei University

**Host** 조경래 교수


언어: English

### 학력

2008 Ph.D., in Neuroscience, The University of Texas Southwestern Medical Center, USA

1999 M.S., in School of Life Science, GIST

1997 B.A., in Dept. of Microbiology, Hankuk(Korea) University of Foreign Studies, Korea

### 경력

2018 - 현 재 Associate Professor, Yonsei University (College of Dentistry)

2013 - 2017 Assistant/Associate Professor, Yonsei University (Wonju College of Medicine)

2009 - 2013 Postdoctoral Researcher II, UT-Southwestern Medical Center, Division of Hypothalamic Research

2003 - 2004 Research Scientist, Seoul National University Hospital

2001 - 2002 Research Scientist, GIST

### Abstract


Dysfunction of primary cilia is related to homeostatic disruption leading to a wide range of disorders. The ventromedial hypothalamus (VMH) has been known to regulate several body homeostasis. However, specific homeostasis modulated by VMH primary cilia is not known. In this study, we identify that VMH primary cilia as an important organelle maintaining energy and skeletal homeostasis by controlling autonomic nervous system. Specifically, we deleted primary cilia specifically in the VMH either by targeting IFT88 (IFT88 KOSF1) using SF1-cre (Steroidogenic factor 1-cre) or by injecting AAV-cre virus directly into the VMH. Functional impairments of VMH primary cilia are linked to decreased sympathetic tone and central leptin resistance, which leads to marked obesity and high bone density. Obesity was associated with hyperphagia, insulin and leptin resistance, decreased energy expenditure (EE), and blunted brown fat function. In addition, we found that increased osteoblastic and decreased osteoclastic activities exhibiting increased bone density in the KO femur. Therefore, this study reveals the role of VMH primary cilia as a central hub for energy and skeletal homeostasis.