Keynote Lecture 1

Chairperson

Min-Seon Kim
University of Ulsan, Korea

Speaker

Joel K. Elmquist
UT Southwestern Medical Center, USA

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• Education

Period	Affiliation	Position
– **1994-1996**	Harvard Medical School	Advisor
– **1993**	Iowa State University	Ph.D.
– **1992**	Iowa State University	D.V.M.
– **1985-1988**	College of Agriculture	B.A.

• Affiliations / Experience

Period	Affiliation	Position
– **2022-Present**	UT Southern Medical Center	Vice Chair of Research
– **2011-Present**	UT Southern Medical Center	Distinguished Chair in Medical Science
– **2006-Present**	UT Southern Medical Center	Professor
– **2006-Present**	UT Southern Medical Center	Director
– **2006-Present**	UT Southern Medical Center	Maclin family Professor in Medical Science, in Honor of Dr. Roy A. Brinkley

• Committee Memberships

- Journal of Neuroscience
- NIH IPOD Study Section
- American Diabetes Association
- NIH NIDDK Advisory Council
- Life Sciences Institute Advisory Board – University of Michigan

• Publications

- Ursino G, Ramadori G, Höfler A, Odouard S, Teixeira PDS, Visentin F, Veyrat-Durebex C, Lucibello G, Firnkes R, Ricci S, Vianna CR, Jia L, Dirlewanger M, Klee P, Elmquist JK, Roth J, Vogl T, Schwitzgebel VM, Jornayvaz FR, Boland A, Coppari R. Hepatic non-parenchymal S100A9-TLR4-mTORC1 axis normalizes diabetic ketogenesis. *Nat Commun*. 13(1):4107. doi: 10.1038/s41467-022-31803-5. PMID: 35840613; PMCID: PMC9287425
- Speakman JR, Elmquist JK. Obesity: an evolutionary context. *Life Metab*. 1(1):10-24. doi: 10.1093/lifemeta/loac002. PMID: 36394061; PMCID: PMC9642988
- Tan S, Santolaya J, Wright TF, Liu Q, Fujikawa T, Chi S, Bergstrom CP, Lopez A, Chen Q, do Vale GD, McDonald JG, Jia D, Elmquist JK, Sifuentes-Dominguez L, Burstein E. An enteroendocrine-microbial axis in the large intestine controls host metabolism. *Res Sq [Preprint]*. rs.3.rs-3112286. doi: 10.21203/rs.3.rs-3112286/v1. PMID: 37461519; PMCID: PMC10350199

Keynote Lecture 1

SF-1 Targets in the Hypothalamus: Novel Pathways Regulating Energy Balance and Metabolism

Joel K. Elmquist (UT Southwestern Medical Center, USA)

The brain plays a critical role in regulating food intake, body weight and blood glucose levels. Dysfunction of this regulation results in obesity and diabetes. Key signals act on collection of neurons within the hypothalamus to regulate food intake and body weight and glucose homeostasis. However, the inherent complexity of these circuits has made it extremely difficult to identify the key neurons that regulate these processes. Over the past several years the ability to manipulate gene expression in a neuron-specific fashion has become feasible. We will describe some our recent findings using mouse models that allow neuron-specific manipulation of genes in the ventral medial hypothalamus. We will explore the role of these circuits during periods of food availability and following metabolic challenges. We will discuss recent findings that provide evidence how distinct hypothalamic cell groups including the ventral medial nucleus of the hypothalamus (VMH) regulate energy balance and glucose homeostasis. We will also discuss the use of a novel Drosophila platform to identify novel transcriptional targets in the VMH that link physiological challenges and alterations in metabolism.