



OPEN ACCESS

EDITED AND REVIEWED BY
Ruth Andrew,
University of Edinburgh, United Kingdom

*CORRESPONDENCE

M. Seldin
✉ mseldin3@gmail.com
D. Stefanovski
✉ sdarko@vet.upenn.edu

RECEIVED 16 May 2023
ACCEPTED 30 June 2023
PUBLISHED 13 July 2023

CITATION

Seldin M and Stefanovski D (2023) Editorial:
Insights in systems endocrinology: 2021.
Front. Endocrinol. 14:1223931.
doi: 10.3389/fendo.2023.1223931

COPYRIGHT

© 2023 Seldin and Stefanovski. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Editorial: Insights in systems endocrinology: 2021

M. Seldin^{1*} and D. Stefanovski^{2*}

¹The Department of Biological Chemistry, University of California, Irvine, Irvine, CA, United States,

²Department of Clinical Studies - New Bolton Center, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA, United States

KEYWORDS

systems biology, big data, machine learning, mathematical modeling, systems endocrinology

Editorial on the Research Topic

Insights in systems endocrinology: 2021

Systems endocrinology is a rapidly growing field that leverages novel methodologies such as systems biology, big data, and machine learning to broaden our understanding of the complex interaction of hormones and their action on regulating normal physiological function as well as the etiology of complex diseases such as diabetes, obesity, heart disease, and many others. With this Research Topic of Systems Endocrinology, we attempted to illustrate the breadth of the field. Starting from the top level (populations of individuals) and ending on the molecular level, this Research Topic highlights the work of four international groups.

Starting from the most extensive system level (multiple cohorts of subjects), the article by [Zhou et al.](#) presents the systematic review and meta-analysis of studies dealing with the effects of SGLT2i in comparison to other antihyperglycemic drugs and their impact on hepatic fibrosis and steatosis. This study highlighted the diversity of drug responsiveness, where liver outcomes differed in categories such as patient age. Then, moving down to the level of a single endocrine system, [Morettini et al.](#) present a novel model of the effect of amino acids on insulin kinetics. Here, the authors implemented a simple model to capture glucose tolerance test dynamics in response to amino acid changes, where AA-mediated increases in insulin secretion were not predicted to be significantly impacted by T2D status. Expanding on models of metabolic homeostasis, [Shi et al.](#) performed a pathway-informed analysis of potential resveratrol target genes which were relevant for impacting preeclampsia. By integrating several datasets using gene ontology, keg, PPI and molecular docking approaches, several key driver pathways were elucidated, such as

RAGE and HIF1 α . Finally, to capture the complexity of inter-organ signaling in the context of large-scale datasets, [Bankier and Michoel](#) present an elegant review detailing usage of eQTLs in guiding hormone signaling and tissue coordination.

In sum, these studies reflect the diversity of approaches and methods to utilize systems-based approaches in investigation of endocrinology.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.