



OPEN ACCESS

EDITED AND REVIEWED BY
Claire Perks,
University of Bristol, United Kingdom

*CORRESPONDENCE
Guang-Liang Chen
✉ guangliang_chen@fudan.edu.cn

RECEIVED 13 November 2024
ACCEPTED 15 November 2024
PUBLISHED 02 December 2024

CITATION
Chen G-L, Luo Y, Zhang Y and Liu C (2024)
Editorial: Unraveling the complex interplay
between aging, immunity, metabolites, and
metabolism in endocrine-related cancers.
Front. Endocrinol. 15:1527867.
doi: 10.3389/fendo.2024.1527867

COPYRIGHT
© 2024 Chen, Luo, Zhang and Liu. 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: Unraveling the complex interplay between aging, immunity, metabolites, and metabolism in endocrine-related cancers

Guang-Liang Chen^{1*}, Yubin Luo², Yuwei Zhang² and Chao Liu³

¹Shanghai Cancer Center, Fudan University, Shanghai, China, ²West China Hospital, Sichuan University, Chengdu, China, ³Harvard Medical School, Boston, MA, United States

KEYWORDS

endocrine-related cancers, aging, metabolic, breast cancer, immune, Mendelian randomization

Editorial on the Research Topic

Unraveling the complex interplay between aging, immunity, metabolites, and metabolism in endocrine-related cancers

Endocrine-related cancers span a diverse range of malignancies affecting organs such as the breast, thyroid, and adrenal cortex, each profoundly influenced by aging, metabolic reprogramming, and shifts in immune function. This editorial examines the contributions within this Research Topic, focusing on studies that explore the intersections of aging, immune modulation, and metabolic pathways and their roles in cancer progression and treatment outcomes.

A notable study by [Feng et al.](#) on metabolic reprogramming in gastric cancer introduces a robust metabolic model that categorizes patients based on metabolic activity, uncovering critical links to prognosis. This approach to metabolic profiling highlights the value of integrating metabolic states into tailored treatment strategies, advancing personalized care for gastric cancer patients.

Several studies in this Research Topic investigate HER2 expression in breast cancer, led by Professor Biyun Wang's research group at the Fudan University Shanghai Cancer Center, a prominent center for breast cancer research in China. These studies collectively underscore the complexity of treatment strategies for HER2-targeted therapies. For instance, the work by [You et al.](#) on the clinicopathological characteristics and outcomes of HER2-low metastatic breast cancer demonstrates that HER2 expression varies significantly between primary and metastatic lesions, impacting treatment responses and underscoring the need for continuous HER2 monitoring to optimize therapy. Complementing this, a comparative study of pyrotinib versus trastuzumab in HER2+ metastatic breast cancer highlights the nuanced decision-making required in HER2-directed treatments ([You et al.](#)). Adding further depth to HER2 research, [Hu et al.](#)'s pooled analysis of HER2-low, hormone receptor-negative metastatic breast cancer reveals distinct clinical characteristics in this subgroup. Notably, HER2-low patients are generally older and predominantly postmenopausal, yet they show comparable outcomes to HER2-0 patients when

receiving platinum-based chemotherapy. These findings emphasize the clinical relevance of HER2-low as an actionable biomarker and underscore the need for further investigation into its prognostic significance. In a study from Prof. San-Gang Wu's team at Xiamen Cancer Center, [Liu et al.](#) examine age-specific metastatic patterns in breast cancer, discovering a notable trend: older patients exhibit a higher tendency for lung rather than liver metastases and generally face poorer survival outcomes. This finding underscores the critical impact of aging on metastatic behavior in breast cancer, highlighting the need for tailored treatment strategies that address the unique challenges faced by older patients.

Mendelian randomization has emerged as a powerful tool for analyzing the interplay between different diseases, gaining traction in recent years for its potential to reveal causal relationships. This Research Topic includes several notable studies employing this approach. For example, [Li et al.](#) investigate the intriguing link between neurodegenerative and oncogenic pathways, revealing a genetic basis for a reduced prostate cancer risk in Alzheimer's patients. Using bidirectional Mendelian randomization, their study suggests an inverse relationship between neurodegenerative and cancer processes. In the realm of metabolism and carcinogenesis, [Wu et al.](#) identify a causal association between blood metabolites and basal cell carcinoma (BCC), with polyunsaturated fatty acids (PUFAs) emerging as significant risk factors. This underscores the potential role of metabolic screening in assessing BCC risk. Additionally, [Ding et al.](#) explore the role of inflammatory markers in lung adenocarcinoma through Mendelian randomization, revealing how IL-17A and specific metabolites influence cancer risk. These findings offer valuable insights for anti-inflammatory therapeutic strategies and deepen our understanding of cancer pathogenesis.

We are pleased to note that certain studies within this Research Topic have already garnered multiple citations shortly after publication, underscoring their pivotal impact and relevance across various scientific fields. This citation pattern highlights how these findings are shaping current research directions and informing future investigations, particularly in the interconnected areas of aging, immunology, and metabolism.

Collectively, these articles underscore the critical need for interdisciplinary approaches to drive advancements in endocrine-related cancer research. By integrating perspectives from aging, immunology, and metabolic science, this Research Topic lays a foundation for precision medicine, fostering innovations that address the intricate biological landscapes of endocrine-related cancers.

Author contributions

GC: Writing – review & editing, Writing – original draft. YL: Writing – review & editing, Writing – original draft. YZ: Writing – review & editing, Writing – original draft. CL: Writing – review & editing, Writing – original draft.

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.

Generative AI statement

The author(s) declare that Generative AI was used in the creation of this manuscript. ChatGPT-4 has been used to assist with the writing process and grammatical accuracy.

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.