

Speaker's Biosketch

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Byung-Chul Oh (Gachon University, Republic of Korea)

Prof. Byung-Chul Oh is a Full Professor of physiology and Vice President of Lee Gil Ya Cancer and Diabetes Institute at Gachon University. His research focuses on the complex interplay between intracellular Ca^{2+} and phosphoinositides (PIPs) and their essential roles in regulating cellular processes such as metabolism and cell survival. Throughout his career, he has contributed significantly to understanding how intracellular Ca^{2+} overload negatively impacts the membrane localization of PIP-binding proteins, providing novel insights into the pathogenesis of various diseases and potential therapeutic strategies. One of his key findings is that elevated intracellular Ca^{2+} levels lead to the formation of Ca^{2+} -phosphoinositide complexes (Ca^{2+} -PIPs), which disrupt the membrane targeting of proteins containing PH domains (Kang et al., 2017, PNAS). This finding has important implications for insulin signaling, as many key proteins involved in this pathway rely on PH domain-mediated membrane localization. His research group has demonstrated that Ca^{2+} -PIPs formation is a critical mechanism underlying insulin resistance in obesity and type 2 diabetes. Building upon these findings, we have explored the therapeutic potential of targeting intracellular Ca^{2+} overload to alleviate insulin resistance and improve metabolic health. In a recent study, we showed that pharmacological inhibition of Ca^{2+} overload using ARB effectively reduced Ca^{2+} -PIPs formation and restored insulin sensitivity in mice fed a high-fat diet (HFD) (Lee et al., 2023, EMM). This work highlights the translational potential of our research and opens new avenues for the development of targeted therapies for metabolic disorders.

As a PI and co-investigator on numerous grants funded by the National Research Foundation of Korea (NRF) and other prestigious institutions, He has successfully led and managed multi-disciplinary research projects, fostering collaborations with both national and international researchers. These collaborative efforts have resulted in high-impact publications in top-tier journals, advancing our understanding of the role of Ca^{2+} and PIPs in health and disease (e.g., Kim et al., 2022, Cell Death & Differ; Na et al., 2023, Cytokine & Growth Factor Reviews, Oh, BC., EMM 2023).

He has demonstrated strong leadership, mentorship, and administrative skills throughout his career. He has trained and mentored numerous graduate students and postdoctoral fellows, many of whom have gone on to successful independent research careers. As the Vice President of Lee Gil Ya Cancer and Diabetes Institute, he has played a key role in shaping the institute's research direction and fostering a collaborative and innovative research environment. In summary, his extensive expertise in Ca^{2+} and phosphoinositide signaling, combined with leadership skills and track record of impactful research, position him well to continue making significant contributions to the field. The proposed research project builds logically on his prior work and has the potential to yield novel insights into the mechanisms underlying adipose tissue dysfunction in obesity, paving the way for the development of innovative therapeutic strategies.