IADR® INTERNATIONAL ASSOCIATION FOR DENTAL, ORAL, AND CRANIOFACIAL RESEARCH

AADOCR® American Association for Dental, Oral, and Craniofacial Research

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Understanding the Oral Premalignancy-to-Cancer Transition at Single-cell Resolution: New Opportunities for Prevention and Treatment

Alexandria, VA, USA – A Distinguished Lecture Series presentation examining the processes underlying cancer initiation at single-cell resolution was presented at the 104th General Session of the IADR, which was held in conjunction with the 55th Annual Meeting of the American Association for Dental, Oral, and Craniofacial Research and the 50th Annual Meeting of the Canadian Association for Dental Research on March 25-28, 2026 in San Diego, CA, USA.

The third 2026 IADR/AADOCR/CADR General Session Distinguished Lecture Series session, "Understanding the Oral Premalignancy-to-Cancer Transition at Single-cell Resolution: New Opportunities for Prevention and Treatment," was presented by J. Silvio Gutkind, University of California, San Diego, CA, USA.

Gutkind is a Distinguished Professor and Chair, Department of Pharmacology, School of Medicine, and Associate Director for Basic Science at the Moores Cancer Center, University of California, San Diego (UCSD). He received his Ph.D. in pharmacy and biochemistry from the University of Buenos Aires, Argentina. He served as the Chief of the Oral and Pharyngeal Cancer Branch at the U.S. National Institute for Dental and Craniofacial Research from 1998 until his recruitment to UCSD in 2015.

Gutkind's research team is exploiting emerging insights into dysregulated signaling circuits and individual genomic and molecular alterations to develop novel precision cancer therapies and multimodal strategies that enhance response to immune checkpoint blockade. It has recently employed spatiotemporally controlled oncogene activation and tumor suppressor inhibition, together with multi-omics, to elucidate the processes underlying oral epithelial progenitor cell reprogramming into tumor-initiating cells at single-cell resolution.

Tumor-initiating cells display a distinct stem-like state, characterized by aberrant proliferation, hypoxia, squamous differentiation, and partial epithelial-to-mesenchymal invasive gene programs. Cancer initiation by aberrant Hippo and PI3K-mTOR pathways involves activation of oncogenic transcriptional networks and recruitment of myeloid cells to the invasive front, contributing to tumor infiltration. These tumor-initiating cell transcriptional programs are conserved in human oral cancer and associated with poor patient survival. These findings illuminate the process underlying cancer initiation at single-cell resolution and identify candidate targets for early cancer detection and prevention.

In his presentation, Gutkind explored the transition from oral premalignancy to cancer, highlight the role of the Hippo and PI3K-mTOR pathways in oral cancer initiation, and discussed the role of immune evasion as a key step in cancer initiation and progression.

The Distinguished Lectures Series presentation, “Understanding the Oral Premalignancy-to-Cancer Transition at Single-cell Resolution: New Opportunities for Prevention and Treatment,” took place on Saturday, March 28 at 9:45 a.m. PDT (UTC-7).

About IADR/AADOCR

The International Association for Dental, Oral, and Craniofacial Research (IADR) is a nonprofit organization with a mission to drive dental, oral, and craniofacial research for health and well-being worldwide. IADR represents the individual scientists, clinician-scientists, dental professionals, and students based in academic, government, non-profit, and private-sector institutions who share our mission. The American Association for Dental, Oral, and Craniofacial Research (AADOCR) is the largest division of IADR. Learn more at www.iadr.org.