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Cancer Stem Cells: New Frontiers in Targeted Cancer Therapy**Michael Anderson**

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Cancer stem cells (CSCs) are a small subpopulation of tumor cells with the unique ability to self-renew, differentiate, and initiate tumor formation. Growing evidence suggests that CSCs play a critical role in tumor recurrence, metastasis, and resistance to conventional chemotherapy and radiotherapy. Consequently, targeting CSCs has emerged as one of the most promising strategies for improving long-term cancer treatment outcomes. This presentation reviews the biological characteristics of CSCs across multiple malignancies, including breast, colorectal, lung, and pancreatic cancers. Recent studies have identified several signaling pathways including Wnt/ β -catenin, Notch, Hedgehog, and PI3K/Akt that regulate CSC maintenance and survival. Advances in molecular biology have enabled the development of novel therapeutic agents designed to selectively inhibit these pathways while preserving normal stem cell function.

In addition, the presentation explores the role of single-cell sequencing, patient-derived organoids, and artificial intelligence in identifying CSC-specific biomarkers and predicting therapeutic responses. Combination therapies integrating targeted drugs, immunotherapy, and stem cell-based regenerative approaches have demonstrated encouraging results in preclinical and early clinical studies by reducing tumor recurrence and improving treatment sensitivity. Despite significant progress, several challenges remain, including tumor heterogeneity, treatment resistance, and the identification of highly specific CSC markers.

Biography

Michael Anderson is a leading cancer biologist specializing in cancer stem cell biology and targeted therapeutics. He has authored more than 180 peer-reviewed publications and serves on the editorial boards of several international oncology journals.