

# An Innovative Approach to Understanding and Treating Cancer: Targeting pH

From Etiopathogenesis to New Therapeutic Avenues



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An Innovative Approach to Understanding and Treating Cancer: Targeting pH: From Etiopathogenesis to New Therapeutic Avenues (English Edition) Versión Kindle

An Innovative Approach to Studying and Treating Cancer: Targeting pH describes one of the few characteristics of cancer that is not shared by normal tissues: the reversal or inversion of the pH gradient when intracellular pH becomes alkaline and extracellular pH becomes acid. This is now recognized as one of the most selective and differential hallmarks of all cancer cells and tissues, being the opposite of the condition found in normal tissues and a potential target in order to achieve either a stable disease or even regression with no toxicity. The book discusses topics such as lactic acid and its transport system in the pH paradigm, mechanisms to decrease extra cellular pH and increase intracellular pH, NHE-1 activity in cancer, carbonic anhydrases, vacuolar ATPase proton pump, and the sodium-bicarbonate cotransporter system. Additionally, it discusses complementary pharmacological interventions, cellular acidification and extracellular alkalization as a new and integral approach to cancer treatment. It analyzes the mechanisms that lead to the inversion of pH gradient in cancer

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- Summarizes almost 100 years of research on pH inversion in cancer in one single source, discussing the most relevant and updated researches in the field
- Proposes new efficient treatments against cancer using pH inversion mechanisms, either with new drugs like proton transport inhibitors and proton pump inhibitors (PTIs and PPIs) or with repurposed drugs.

Authors:

Tomas Koltai

Graduated as MD at University of Buenos Aires School of Medicine, Argentina (1969). Surgical Intern, Nassau County Medical Center, USA (1972-73) and Surgical Resident, at the same institution (1973-1975). Board Certified Specialist in Medical Oncology (1985). PhD in Chemistry (1997) and Master in Sciences in Molecular Oncology, University of Buenos Aires (2011). Staff oncologist, Sanatorio Mater Dei, Argentina (1985-1990). Head of Oncology, Central Hospital of the Centro Gallego de Buenos Aires (1990-2000) and Medical Director, at the same institution (2000-2002). Head of the Department of Chemotherapy, National Social Services for Retirees, Argentina (2002-2014). Head of the Department of Oncology, Social Services of the National Food Workers Union, Argentina (2010-2014) and Medical Director at the same institution (2014-2016). He has authored several seminal publications on pH and cancer and created the new "triple-edged cancer treatment".

Professor Stephan J. Reshkin has a long-standing expertise in the biology of the NHE1 system and has extensively investigated its role in tumor transformation and malignancy resulting in more than 40 publications on just that topic. Last year he was a guest author and editor together with Salvador Harguindey on a special issue in Seminars in Cancer Biology concerning the role of pH in cancer and neurodegeneration. Recently his group has provided a structural basis for this role of the NHE1 in tumor cell invasion and the regulation of proteolytic activity localized at invadopodia. To do this, the Reshkin group has developed a series of innovative techniques to study the dynamics of invadopodia.

Salvador Harguindey MD., Ph D. Specialized in Medical Endocrinology, Royal Infirmary Hospital, University of Edinburgh, Scotland (1974-1977) and Department of Endocrinology, Eugene Talmage Memorial Hospital, USA (1977-1981). Specialty in Medical Oncology, Roswell Park Memorial Institute, USA (1981-1985). Consultant in Medical Oncologist, University Clinic, Spain (1985-2000). He co-founded and was Vice-president of the International Society for Proton Dynamics of Cancer (ISPDC) (2008). Co-editor and author on a special issue in Seminars in Cancer Biology (2017) entitled "The new pH-centric anticancer paradigm in Oncology and Medicine". Harguindey has published more than 140 scientific publications on a new and integral approach to the understanding of cancer and neurodegenerative diseases based upon hydrogen ion dynamics, from etiopathogenesis to treatment, that he originally and singlehandedly created.