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# Inflammation, aging and cancer: 'Targeted' Therapy- Seeing 'Elephant' in the light

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Despite heavy public investment for over four decades on cancer war, progress in understanding the complex biology of cancer is still fragmentary. Consequently, few, if any funded projects have proven worthy of seriously translating research into effective cancer diagnosis, prevention or therapy while incidence of cancer is projected to rise globally in the next decade, particularly for the growing older population.

Cancer cell is a defective cellular component whose growth is routinely monitored and arrested normal self terminating acute inflammatory processes of immune system, known as immune surveillance (killing of cancer cells). Cancer becomes a threat to body when dynamics of immune system alter, particularly during aging. Unresolved inflammation was recently defined as loss of balance between 2 biologically opposing arms of acute inflammation, 'Yin' (apoptosis, growth arresting or 'tumoricidal') and 'Yang' (wound healing, growth promoting or 'tumorigenic') responses. Under a variety of inflammatory conditions, unresolved inflammation could create an 'immunological chaos' or 'immune tsunami' in affected tissues by exaggerated co-expression and co-existence of apoptotic and wound healing factors leading to diverse manifestations of acute inflammatory diseases such as sepsis, meningitis or autoimmune and neurodegenerative diseases as well as many cancers.

The 'accidental' discoveries that we established over 20 years ago, on experimental models of acute and chronic inflammatory diseases are suggestive of the first evidence for a direct association between inflammation and tumorigenesis. Analyses of these ground-breaking findings led to a first report on time-course kinetics of inflammation-induced identifiable phases of inflammation induced immune dysfunction and tumorigenesis and angiogenesis. Further extension, confirmations and validations of these studies are required to systematically identify developmental stages of inflammation-induced changes in immune responses that lead to carcinogenesis. Inflammation is likely a common denominator in the genesis and progression of chronic diseases and cancer. Understanding dynamics of unresolved inflammation that would lead to cancer growth may prove to be most rational cost-effective strategies for diagnosis, prevention and therapy of age-associated chronic diseases and cancer and for ideal 'Targeted' therapies.

## Biography

Dr. Mahin Khatami immigrated to USA in 1969 after training in Chemistry (BS) and Science Education (MS) in Iran. She received her MA in Biochemistry from SUNY at Buffalo (1977) and Ph.D. in Molecular Biology from the University Of Pennsylvania (UPA, 1980). Her Postdoctoral framings were in physiology, protein chemistry and immunology at UVA, Fox Chase Cancer Center & UPenn. She became A Faculty of Medicine at Dept. Ophthalmology-UPA until 1992; and in collaboration with a team of scientists, under direction and support of John H Rockey, MD, Ph.D., she quickly earned her supervisory responsibilities on two major projects; cell/molecular biology of diabetic retinopathy/maculopathy and experimental models of acute and chronic inflammatory diseases. As a junior Faculty, she was perhaps a most productive scientist in the country as she published 39 scientific articles and over 60 abstracts in conference proceedings in the first decade of her academic career. Since 1998, at NCI/NIH, extension of her earlier discoveries on immunobiology of inflammatory diseases became closely relevant to her duties as Program Director-HAS for developing concepts for molecular diagnosis ,prevention and therapy of cancer for large clinical Trials ( Prostate-Long-Colorectal- Ovarian) and designs of cohort clinical studies. Dr. Khatami has lectured internationally; served as scientific judge; consultant to pharmaceutical companies; research advisor; member of professional societies; editorial member ships & reviewer activities; symposia organizer; president of graduate women In Science, Washington Chapter. Before retiring in 2009, her position title was Assistant Director for Technology Program Development, Office of Technology and Industrial Relations and Program Director-IMAT, Office of Director, NCI/NIH. She is currently Book Editor on Inflammatory Diseases.