



DIPARTIMENTO DI FARMACIA E BIOTECNOLOGIE

Life & Chemical Sciences Seminars

Cancer immunoprevention

Prof. Pier-Luigi Lollini

*Department of Experimental, Diagnostic and
Specialty Medicine, University of Bologna*

Venerdì 18 maggio ore 14:30 – Aula 1, Via Belmeloro 6
(ospite Prof. A.M. Porcelli)

Abstract

A functional immune system is not fully efficient in preventing either infections or tumors, but immune stimulation could increase its efficacy and further reduce the risk of disease.

Human cancer immunoprevention is already operational at the population level, with vaccines against hepatocellular carcinoma (HBV) and cervical carcinoma (HPV); the latter could lead, for the first time in human history, to the disappearance of a deadly cancer, just as vaccination eradicated smallpox.

Is immunoprevention also applicable to the vast majority (>80%) of human tumors, which are unrelated to infectious agents? Preclinical studies by my Laboratory, and many others around the world, demonstrated that immune stimulation does indeed prevent tumor onset.

Vaccination of young, healthy HER-2 transgenic mice, which are prone to mammary carcinogenesis later in life, effectively blocked tumor onset through mechanisms regulated by T cell cytokines and effected by anti-HER-2 antibodies. The fact that HER-2 is an oncoantigen, i.e. an antigenic molecule causally involved in carcinogenesis, was a key element in determining long-term immunoprevention.

Early clinical application in a series of recent vaccination trials in people carrying benign or early neoplastic lesions showed that immunoprevention is a translatable and promising approach to reduce the risk of human cancer development.

Biosketch

Pier-Luigi Lollini is Professor of General Pathology at the Department of Experimental, Diagnostic and Specialty Medicine of the University of Bologna, Bologna, Italy.

His long-standing research interests include tumor immunology, in particular the prevention of tumors with immunological means, and the cellular and molecular determinants of tumor heterogeneity, progression, and metastatic dissemination.

He studied biology (1980) and earned a Ph.D. in oncology (1987) under the supervision of Giorgio Prodi at the University of Bologna, where he became Associate Professor of General Pathology (1992), then Full Professor (2001). He is the Director of the Ph.D. program in Oncology, Hematology and Pathology of the University of Bologna. Previous academic appointments included the direction of the Institute for Cancer Research and of the Interdepartmental Center for Cancer Research.

Pier-Luigi Lollini is a member of the advisory board of the Associazione Italiana per la Ricerca sul Cancro (AIRC), the major Italian cancer charity, and of its Emilia Romagna regional Committee.