

John M. Pezzuto

Dr. Pezzuto received his B.S. degree in chemistry from Rutgers University (1973), and Ph.D. in biochemistry from the University of Medicine and Dentistry of New Jersey (1977). He then performed two years of postdoctoral work in the Department of Chemistry at Massachusetts Institute of Technology, where he was the recipient of a postdoctoral fellowship from the National Cancer Institute. Following a one-year stay at the University of Virginia, as Instructor of Chemistry, he accepted a faculty position at the University of Illinois at Chicago (1980). He held the rank of full professor in both the College of Pharmacy (1991-2002) and the College of Medicine (1994-2002); and he was named Distinguished University Professor at the University of Illinois at Chicago (2002). He has served as Head (1993-1995) and Interim Head (2000-2001) of the Department of Medicinal Chemistry and Pharmacognosy in the UIC College of Pharmacy, Associate Director of the UIC Cancer Center (1991-1995), and Director of the Program for Collaborative Research in the Pharmaceutical Sciences (1995-1998), the leading research unit affiliated with the UIC College of Pharmacy. He served as Associate Dean for Research and Graduate Education, UIC College of Pharmacy (1998-2002), Deputy Director of the UIC Cancer Center (2000-2002), and Head of the Department of Medicinal Chemistry and Pharmacognosy (2001-2002). Dr. Pezzuto served as professor and Dean at the College of Pharmacy, Nursing and Health Sciences of Purdue University (2002-2006), and Chief Scientific Officer for pharmaceutical development at McClure Park, Inc., an affiliate of the Purdue Research Foundation (2004-2006). He is currently professor and Founding Dean at the College of Pharmacy at the University of Hawaii at Hilo. He is an author of over 400 publications, co-inventor of several patents, the editor of three books, member of eleven editorial boards of international journals, the former editor-in-chief of the *International Journal of Pharmacognosy* (1990-1995), the former editor-in-chief of *Combinatorial Chemistry and High Throughput Screening* (1996-1997), and the current editor-in-chief of *Pharmaceutical Biology*. He is a permanent member of Subcommittee E (cancer epidemiology, prevention and control) of the National Cancer Institute (2003-). He was the recipient of a Research Career Development Award from the National Cancer Institute (1984-1989) and a Research Fellowship from the Alexander von Humboldt Foundation (1990-1991). During the period of the Humboldt fellowship, he held a research position in the Department of Pharmaceutical Biology at the University of Munich. He has directed the research of numerous doctoral students, postdoctoral associates, and visiting scholars. He was elected Senior University Scholar at UIC in 1999, and UIC Inventor of the Year in 2000. His current research interests are predominately in the areas of biology-driven natural product drug discovery and characterization, with primary emphasis in the fields of cancer chemotherapy, cancer chemoprevention, malaria, and AIDS. He has been supported by the National Institutes of Health continuously since 1977, and currently serves as the Principal Investigator of a Program Project grant in cancer chemoprevention and Program Leader for an International Collaborative Biodiversity Group.

S-13 DISCOVERY OF NATURAL PRODUCTS AS INHIBITORS OF CARCINOGENESIS

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Cancer chemoprevention is a process by which the phenomenon of carcinogenesis is inhibited by dietary components or pharmaceutical agents. Our efforts in this area have been predominately directed toward novel drug discovery. By means of a program project mechanism, we are capable of bringing discoveries from the collection site to the level of establishing in vitro efficacy with pure (structurally- and mechanistically-characterized) chemical entities. Plant materials have been most heavily explored but, more recently, the organisms from the marine environment have been investigated. Extracts are first evaluated with a panel of in vitro bioassays (designed to monitor inhibition of the initiation, promotion or progression stages of carcinogenesis), and active leads are then evaluated in a more complicated and time-consuming assay, which employs carcinogen-treated mouse mammary glands in culture. Active compounds are then isolated and identified using bioassay-directed fractionation or higher throughput mass spectrometry-based screening assays. Over 200 compounds have been discovered that are active in various in vitro test systems, and many of these are active in preventing the formation of carcinogen-induced preneoplastic lesions in mouse mammary organ culture. As examples of the development of lead chemoprevention agents within the scope of the program project effort, the metabolism and oral absorption of these compounds are evaluated using in vitro hepatic and intestinal models in preparation for in vitro evaluation of bioavailability, safety and efficacy in full-term tumorigenesis models. The effect of delaying tumorigenesis beyond the lifespan of a normal human being is equivalent to curing cancer. This type of "cure" is achievable in our lifetime. (Supported by P01 CA48112 awarded by the National Cancer Institute).