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Editorial

Rodney B. Croteau

The two Special Issues of Phytochemistry are dedicated to the celebration of the 60th anniversary of Rodney Croteau, the Regents as well as Arthur and Katie Eisig-Tode Distinguished Professor of the Institute of Biological Chemistry at Washington State University. The readers should take note that this celebration (see following Foreword by Jonathan Gerzhenzon, Director, Max Planck Institute for Chemical Ecology, Jena, Germany) has involved not only Phytochemistry, but also a special issue of Archives of Biochemistry and Biophysics (ABB). We heartily thank each of the authors of these Special Issues for their contributions in his honor. Thanks are also extended to others who contributed in spirit, but for several reasons were unable to meet the journal deadlines.

Rodney Croteau was born in Springfield, Massachusetts, on December 6, 1945. He is married to wife, Darlene, and has two grown-up daughters (Yvette and Yvonne). He completed his Bachelor of Science and Ph.D. degrees at the University of Massachusetts in 1967 and 1970, respectively, before moving to the West Coast. It seems only fitting that of the nearly four hundred papers published by Rodney Croteau and his research group, the very first was in Phytochemistry in 1969 (8: 2219–2222). Thus began the quite extraordinary productivity of this quite remarkable scientist, with this primarily representing studies devoted towards unraveling complex terpenoid biochemical processes.

The young Rodney Croteau, following completion of his Ph.D. degree, was next awarded a NIH postdoctoral fellowship from 1970 to 1973 to work with the renowned W. David Loomis at Oregon State University. During these early years, his interests began to lean towards ultimately his life-long endeavor in defining the mono- and sesquiterpene biosynthetic pathways of peppermint, with several seminal papers appearing in Phytochemistry on their formation. For example, thus began the experiments using cell-free extracts to probe the biosynthetic pathways to metabolites such as α-terpineol.

A second phase of research activity in Rodney Croteau's scientific life next begun in 1973 with a postdoctoral appointment at Washington State University, where he expanded his interests towards the biosynthesis of the hydroxyfatty acid biopolymer cutin. Beginning as a postdoctoral fellow with Pappachan Kolattukudy, his remarkable abilities quickly resulted in his appointment to Assistant Professor of Biochemistry in 1975.

By 1975, Rodney Croteau began to concentrate his interests and investigations fully to terpene biochemistry and, subsequently, to the molecular biology associated with same. Thus began concerted, comprehensive, investigations on the biosynthesis of numerous terpenes, i.e. via determination of enzymatic steps of mono-, sesqui- and diterpenoid pathways, in the identification of the proteins and the encoding genes, as well as defining the (often) complex biochemical mechanisms involved.

As a result, today we now fully know how the "essential oil" components of various scents, fragrances and aromas are generated in a vast variety of plants. These include familiar species such as sage, peppermint, thyme, fennel, tansy, spearmint and hyssop. His work in other areas has also led to the considerable understanding of how the complex oleoresin defensive arsenal in pine is formed in response to, for example, bark beetle invasion or in wound responses. Additionally, today, the biosynthetic pathway to taxol, a potent chemotherapeutic agent against various refractory cancers (e.g. ovary), is now known largely due to the efforts of the Croteau laboratory.

The scientific legacy of the Croteau years are thus mainly a series of remarkable and incisive studies in identifying and fully characterizing various terpene cyclase reactions (e.g. to taxanes, monoterpenes, such as α- and β-pinenes), as well as of the various dehydrogenases, reductases and cytochrome P-450s which led to the familiar flavor and fragrance chemicals, such as menthol, camphor, fenchone, thujane, the pinenes and so on.

During this remarkably productive period, Rodney Croteau has received many honors and accolades. These include being promoted to full Professor (1984), to Eisig-Tode Distinguished Professor (1995), to a National Academy of Sciences (US) Member in 1997, and to Regent's Professor in 2003. His efforts, dedication, and insights have also been greatly appreciated in his editorial capacities on numerous Editorial Boards including Phytochemistry, ABB, Journal

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of Biological Chemistry, Plant Physiology, and Journal of Essential Oil Research. His work has also received much recognition by the US Federal Granting Agencies where funding was competitively renewed for a period of nearly three decades, i.e., from the National Science Foundation 1997–2005, the National Institutes of Health 1983–2011, the Department of Energy 1983–2004, the US Department of Agriculture 1986–2001 and the Washington State Mint Commission 1978–present. Indeed, Dr. Croteau is one of those rare individuals who decided, rather than the funding agency, when the work had been brought to completion!

As for many outstanding scientists, the many successes of his program have involved excellent dedicated personnel and productive collaborators. Of these, long time co-worker Frank Karp has been extensively involved in many of their seminal discoveries and has been (and continues to be) a most valuable laboratory member. Other productive collaborations over the years have also involved the laboratories of Bob Coates and David Cane.

On behalf of the Phytochemistry Editorial Board, we wish Professor Croteau the very best on his 60th birthday, and many happy returns!

Norman G. Lewis
Washington State University,
Institute of Biological Chemistry,
Clark Hall 467, Pullman,
WA 99164-6340, USA
Tel.: +1 5093352682; fax: +1 5093358206
E-mail address: lewisn@wsu.edu

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