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Editorial

Special Issue in Honor of D. John Faulkner and Paul J. Scheuer

It is with "bittersweet" emotions that we bring this memorial volume to the readership of the *Journal of Natural Products*. Bitter, because this past year we have seen the passing of two eminent scholars-researchers-mentors in the field of marine natural products chemistry, Dr. Paul J. Scheuer (1915−2003) and Dr. D. John Faulkner (1942−2002). The more enjoyable element of publishing this memorial volume comes from the recognition and tribute made to these two exceptional individuals by the many former students and colleagues that are authors to this volume. Indeed, both of these pioneers in the field of marine natural products played key roles in its development, not only within the United States but in the international arena as well.

Over the period 1970−2003, Professors Scheuer (University of Hawaii) and Faulkner (Scripps Institution of Oceanography) were independently two of the most productive researchers in the field of marine natural products chemistry. Collectively, they published approximately 820 research articles, with 115 of these appearing in the *Journal of Natural Products* (including several under the former journal title *Lloydia*) and more than 312 appearing in publications of the American Chemistry Society (chiefly *J. Nat. Prod.*, *J. Org. Chem.*, and *J. Am. Chem. Soc.*). These scholarly contributions served as the vehicles to train and mentor more than 230 graduate and postdoctoral students in this field, many of whom have developed in their careers to become outstanding scholars and research mentors themselves. Brief histories of their lives and contributions in science follow in biographies provided by their former students/colleagues (Professor Roy Okuda for Paul Scheuer and Professor Chris Ireland and Mary Kay Harper for John Faulkner).

Both John Faulkner and Paul Scheuer (1994) received the American Society of Pharmacognosy Research Achievement Award. In John's case, his award was presented posthumously in July 2003 to his wife Meryl Faulkner at the annual meeting in Chapel Hill, North Carolina. Because it is customary for recipients of the ASP Research Achievement Award to provide a perspective on their lifetime contributions as a review article, a group of former students have written such a viewpoint for this memorial volume, with leadership for both the oral session in Chapel Hill and this written perspective being provided by Professor Tadeusz Molinski of the University of California at Davis. Professor Molinski and his coauthors on this insightful and moving tribute, Raymond J. Andersen, Chris M. Ireland, and Carole A. Bewley, are all deeply appreciated by the ASP for their efforts on behalf of their former mentor.

The editors of this volume take great pleasure in thanking the authors of the various contributions to this memorial volume. It is recognized that, in tribute and homage to the memories of these two exceptional individuals, the authors of this volume have contributed some of their finest work in a timetable that has been at times challenging. While plans and efforts to bring this volume to print have been underway for nearly a year, the last few months have been particularly strenuous, and we would like to recognize the diligent efforts of our many authors for their help to make this volume a success. The editors would also like to recognize the exceptional efforts of our editorial assistant at Oregon State University, Ms. Margaret Edwards, who has coordinated the complex process of bringing together four editors, 40 manuscripts, 221 authors, and 80 manuscript reviewers in this memorial volume. Without her beyond-the-call-of-duty effort, it is uncertain if we could have successfully coordinated this substantial undertaking!

Finally, the editors would like to pay their tribute to the scholarly, scientific, and mentorship roles that Professors Paul Scheuer and John Faulkner played in their lives, both directly and indirectly. Truly, their pursuit of scientific knowledge concerning the organic chemistry and ecological function of natural products from diverse marine organisms, their vision for this field of inquiry, and finally, their dedication to their students and colleagues make them exceptional individuals worthy of our admiration, emulation, and the homage being paid in these pages of the *Journal of Natural Products*.

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D. John Faulkner (1942−2002)

John, an only child, was born and raised in Bournemouth, England. His father was handicapped by deafness, and his mother had no schooling past age 14, yet they encouraged John to do well in school and were amazed at his talent. John always excelled in academics and obtained a B.Sc. (with honors) in chemistry from Imperial College in 1962. He continued his studies at Imperial College and at the age of 23 received his Ph.D. in organic chemistry under the guidance of Sir Derek Barton. His thesis was entitled "Studies in the Tetracycline Field".

While in London, John met his future wife, Meryl, who was studying at the School of Pharmacy. Newly married, the Faulkners moved to the United States in 1965 when John began postdoctoral studies with Professor R. B. Woodward at Harvard University. In 1967 he continued postdoctoral studies at Stanford University with Professor William S. Johnson. He was appointed to the faculty of Scripps Institution of Oceanography as an Assistant Professor of Marine Chemistry in 1968, at the tender age of 26!

John's first research projects at Scripps reflected his love of synthetic chemistry. Nonetheless, within a few years John's first generation of students, most of whom were working on doctoral degrees in oceanography and on average were of the same age as John, lured him to the sea. In typical Faulkner flare, his first marine chemistry paper was a 1973 article in *Science*, which described the profound effect of juvenile hormone insecticides on the developmental biology of crustaceans. Simultaneously John's group began an investigation of the natural products chemistry of marine invertebrates and algae from the intertidal zone of Southern California's coastline. As the field was in its infancy, John's earliest students routinely discovered novel and exotic compounds that had no precedent in nature or synthesis. Several students investigated the dietary sources of these compounds, while others looked into chemical defenses of invertebrates, launching John into the field of marine chemical ecology. This catapulted John to the forefront of the emerging field of marine natural products and established him as one of the founding fathers of the field.

John was quick to recognize the biomedical potential of marine invertebrate metabolites and initiated a long-term, fruitful collaboration with Bob Jacobs (UCSB) to study the anti-inflammatory effects of these compounds. The most significant result of this investigation was the discovery of the anti-inflammatory properties of manoalide, a sponge metabolite that irreversibly binds to and inhibits the enzyme phospholipase A_2. Although manoalide did not survive clinical trials, today it remains an important biological probe for anti-inflammatory processes. Subsequent collaborations explored the use of marine natural products as biochemical tools in studies involving motor proteins, the Golgi apparatus, and HIV integrase.

Some of John's most notable contributions to the field of marine natural products are his reviews in *Natural Products Reports*. The first of these reviews appeared in 1984. This review was a monumental feat—not only did he singlehandedly amass thousands of references with limited computer resources, but John also wrote his own database program to manage the load, and all 546 structures in the original manuscript were hand drawn by John. He wrote 18 reviews in total, and they continue to be an indispensable resource for the marine natural products and organic chemistry communities. John's NPR legacy has been continued, but a team of five now accomplishes the task!

John's favorite class to teach was "Structural Elucidation Using Spectroscopic Methods". His meticulous attention to detail coupled with his remarkable ability to analyze spectral data made John a wizard at solving structures; he was consummately thrilled by the challenge of complicated molecules. Throughout his career, John and his students identified more than 300 novel structures. Every student who worked for John knew the rule, that if you left your data sitting out on the bench overnight, the structure would be drawn on the spectrum when you arrived in the morning.

John trained more than 30 Ph.D. and 3 master's students, 32 postdoctoral fellows, and countless undergraduate students, many of whom have their own flourishing careers as scientific researchers. In addition John hosted many visiting scholars and spent sabbatical leaves at Cambridge University of New South Wales, University of British Columbia, and University of Canterbury, where he was honored as an Erskine Fellow. John's capacity for intellectual growth was continuously stimulated, and challenged, by the interests of his students and colleagues. Over the course of his 34 years at Scripps, John (co)authored over 325 publications—51 in the first decade, 99 in the second, and 139 in the third! He never slowed down.

John's lifelong contributions and dedication to the field were recognized in 2002 when he received the Paul J. Scheuer Award in Marine Natural Products and, posthumously, in 2004 when he received the American Society of Pharmacognosy Research Achievement Award.

John is survived by Meryl Faulkner, his loving wife of 37 years. He will be deeply missed by the students and colleagues who are grateful to have had the opportunity to work with John and share his boundless devotion to science.

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Paul J. Scheuer (1915−2003)

Paul Josef Scheuer, Professor Emeritus of the Department of Chemistry, University of Hawaii at Manoa, passed away on January 12, 2003, after a three-year battle with myelodisplasia. Dr. Scheuer is widely regarded as the father of the field of marine natural products chemistry and has made numerous seminal discoveries during his long career. He has trained several generations of scientists in his laboratories, and his impact will continue for many years to come.

Dr. Scheuer was born in Heilbronn, Germany, in May 1915. A Jew, he left Germany in 1933 as the racial policies of the Nazis were increasing. He emigrated to the United States in 1938 and worked in various jobs before starting his undergraduate schooling at Northeastern University (BS Chemistry, 1943). He then began his graduate work at Harvard, but was shortly drafted into the U.S. Army, where he served in counterintelligence for two and a half years. He resumed his graduate work at Harvard in 1946

and joined the laboratory of Robert Burns Woodward (Nobel Prize in Chemistry, 1965). His thesis project dealt with the structure and chemistry of strychnine, and he received his Ph.D. in June of 1950.

Upon his graduation, Dr. Scheuer married Alice Dash and immediately traveled by plane and boat to Hawaii, where he joined the faculty of the University of Hawaii. At that time, UH was not known as a research university, yet the young Dr. Scheuer vigorously embarked on a long journey of discovery in natural products chemistry that was to occupy him for the remainder of his life. His first targets were some of the plants that were indigenous to Hawaii. In the early 1960s, he began to collaborate with his colleagues in marine biology and began to investigate the secondary metabolites from marine organisms, which up to that time had been the subject of only a handful of chemical investigations.

Paul Scheuer is best recognized for his extensive work in the marine field, and his contributions are too numerous to describe in detail here. A few examples are noteworthy. His interest in marine toxins led him to initiate and work for many years on the toxin from the soft coral *Palythoa* and the causative agent of ciguatera (human poisoning from eating certain reef fish). Both of these projects were subsequently completed by former Scheuer postdoctoral fellows: palytoxin by Richard Moore (simultaneously with Y. Hirata's group) and ciguatoxin by Takeshi Yasumoto. Other projects involved the isolation and structure of numerous unique metabolites, such as the first marine isocyanide from the nudibranch *Phyllidia*. The range of studies from the Scheuer group included biosynthesis, chemical ecology, and drug discovery. The Scheuer group was one of the first to use deep water submersibles to collect organisms for chemical studies.

The Scheuer laboratory has been a fertile training ground for a large number of scientists, including 33 Ph.D. students, 25 master's students, and over 110 postdoctoral fellows and visiting colleagues. In addition, it is believed that several *hundred* undergraduates also were trained in the laboratory, although no accurate number exists. Scheuer group members represent over 25 countries and work on all seven continents (including Antarctica!).

A little known accomplishment stands out in particular: since receiving his first grant from the National Science Foundation in 1952, Paul Scheuer maintained a nearly unbroken string of NSF support until 2001. The NSF itself began in 1951, and it is believed that he has the longest record of support in the history of the Foundation.

Paul Scheuer received numerous awards in recognition of his contributions to the field of natural products chemistry and pharmacognosy. These include both the Ernest Guenther Award in Essential Oils and Natural Products (presented by the ACS) and the ASP Research Achievement Award, both of which were awarded to him in 1993. In 1992, members of his research group established and funded the "Paul J. Scheuer Award in Marine Natural Products", which is a perpetual award given every two years at the Marine Natural Products Gordon Conference. In December 2000, a special symposium in his honor was held during the PACIFICHEM 2000 meeting in Honolulu, to mark the 50th year of his tenure at the University of Hawaii.

Paul J. Scheuer is survived by his wife of 52 years, Dr. Alice Scheuer, his four children (Elizabeth, Deborah, David, and Jonathan), daughter-in-law Cami, son-in-law Tim, and grandson Joshua. A fund has been established to support the Scheuer Award and funding for undergraduate and graduate students at UH. Donation checks can be made out *to "UH Foundation—Paul J. Scheuer Memorial Fund"* and mailed to UH Foundation, P.O. Box 11270, Honolulu, HI 96822-2388. For further information, contact Malia Staggs at Malia.Staggs@uhf.hawaii.edu.

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