



## D. John Faulkner (1942–2002)

To cite this article: (2003) D. John Faulkner (1942–2002), *Pharmaceutical Biology*, 41:sup1, 4-5, DOI: [10.1080/1388020039051738](https://doi.org/10.1080/1388020039051738)

To link to this article: <https://doi.org/10.1080/1388020039051738>



Published online: 20 Oct 2008.



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**D. John Faulkner**  
**(1942–2002)**

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### In memoriam

D. John Faulkner made fundamental and insightful contributions to the study of marine natural products chemistry and ecology for more than 30 years. His sense of rigor, coupled with a strong interest in education, made him an outstanding leader in these fields.

Faulkner's fascination with the chemistry of marine life began with his appointment as assistant professor of marine chemistry at the Scripps Institution of Oceanography (SIO), University of California, San Diego in 1968. Prior to taking this appointment, Faulkner had received his Ph.D. in 1965 in organic chemistry under the guidance of Sir Derek Barton at Imperial College. After graduation, Faulkner moved to Harvard University for a postdoctoral position with Robert B. Woodward, and later assumed another postdoctoral position with William S. Johnson at Stanford University. With these extraordinary credentials in organic chemistry, Faulkner's decision to move to a career position in an oceanographic institution seemed, to many, as strange. But, John Faulkner had the ocean in his heart and the rigors of chemistry in his mind. Born in Bornemouth, England, Faulkner grew up next to the sea. When Faulkner joined the faculty at SIO, he quickly began to see the paucity of information defin-

ing the natural products in the sea. By comparison to the well-known chemical diversity on land, the oceans and their inhabitants had received virtually no attention. In the early 1970s, Faulkner and his students made important chemical discoveries that provided the foundation of our understanding today. During these early years, Faulkner began his self-initiated education in ecology, a pursuit he continued until his death. While not formally trained in this area, Faulkner collaborated with biologists in recognizing that secondary metabolites in the ocean were the foundation of a complex chemical adaptation for defense. Despite his interest in ecology, Faulkner was the chemist's chemist. He and his students studied hundreds of sponges and isolated and defined the structures of complex secondary metabolites with unprecedented carbons skeletons and new functional groups. His discovery of the naturally-occurring carbonimidic dichloride functional group ( $C = NCl_2$ ) in sponges of the genus *Pseudaxinyssa* was an example.

Faulkner's interests in marine biomedical research grew to include projects to isolate and define more than 25 new antibiotics, numerous new anticancer agents, and the first authenticated inhibitor of the inflammatory enzyme PLA2.

During the period from 1985 to 2000, Faulkner undertook major collaborations with biomedical researchers to explore the applications marine invertebrate metabolites in various medical applications.

Faulkner's fascination with sponges was partly derived by the fact that many sponges harbor symbiotic bacteria in very high densities, and John often professed that it was impossible to know if the unique secondary metabolites from sponges were products of sponge cells or of the bacterial symbionts. In a series of classic experiments, Faulkner and his students methodically separated sponge cells from bacterial cells by density centrifugation. Analysis of the isolated cells showed that metabolites are stored in, and presumably produced by bacterial cells. These experiments provided the first strong evidence of a major chemically-based symbiotic association in marine invertebrates.

During his career, Faulkner was a visiting scholar at Cambridge University (1975), the University of New South

Wales in Australia (1981), and the University of British Columbia (1989). He was a member of the Royal Society of Chemistry and the American Chemical Society. Faulkner was a prolific writer and published more than 350 peer-reviewed papers. His most often cited papers were his scholarly reviews published for 17 consecutive years in *Natural Products Reports*. These reviews, now considered the most authoritative works in this field, are comprehensive analyses containing both critical and laudatory remarks on findings within this discipline (see D. John Faulkner *Nat Prod Rep* 17(1), 1–57 (2000) for his final review).

In recognition of his extraordinary contributions to this field, Faulkner was the recipient in 2000 of the Paul J. Scheuer Award in Marine Natural Products Chemistry, and in July, 2003, Faulkner received the 'Career Achievement Award', the highest award bestowed by the American Society of Pharmacognosy.