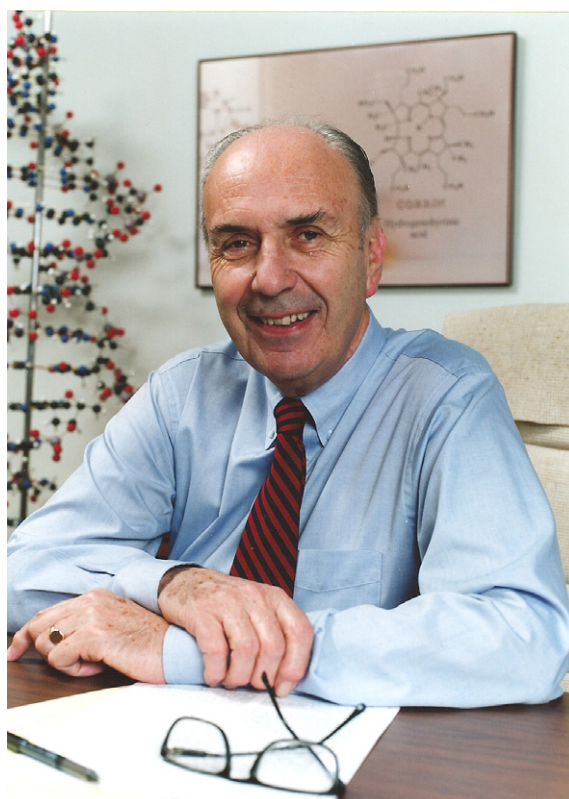


Introduction

Progress in bioorganic and natural products chemistry: A tribute to A. Ian Scott



This issue of *Bioorganic Chemistry*, titled “Progress in bioorganic and natural products chemistry: A tribute to A. Ian Scott”, is the first of two issues dedicated to the memory of Professor A. Ian Scott, who passed away on April 18, 2007. He was 79. In addition to his many seminal contributions to bioorganic and natural products chemistry, Dr. Scott was one of the founding editors of *Bioorganic Chemistry* and remained on the editorial board until his death. The collection of articles in these two issues is a small sampling of the many research endeavors and careers spawned by his work and mentorship.

Coran M.H. Watanabe, an assistant professor of chemistry at Texas A&M University, served as the guest editor

and organized these two issues. She collected articles from Dr. Scott’s colleagues, former graduate and postdoctoral research students, and friends. In the paragraphs that follow, Professors Watanabe and Craig A. Townsend reflect on Dr. Scott’s scientific and personal contributions.

From Coran M.H. Watanabe

Ian Scott was my colleague at Texas A&M University as well as my academic grandfather. Craig Townsend, my Ph.D. advisor, was one of Ian’s first graduate students at Yale. I always felt honored and humbled when Ian would introduce me to his colleagues as his seventh grandchild. I recall first meeting Ian at a Pacificchem conference, where

he was awarded the Tetrahedron Prize for his accomplishments in vitamin B₁₂ biosynthesis. I was a graduate student at the time and remember being completely blown away by his lecture that spanned from chemical synthesis, use of stable isotopes, enzymology, to gene expression, not to mention his ability to fully reconstitute the corrin core of vitamin B₁₂ in a test tube by heterologous expression of these enzymes!

Today, we actively think about genetically engineering biosynthetic pathways and taking chemoenzymatic approaches toward drug design, as well as obtaining crystallographic information on biosynthetic enzymes. Ian was surely a pioneer in the area of natural product biosynthesis, which has provided the foundation to make all of this possible. He was one of the first to utilize stable isotopes and apply nuclear magnetic resonance methods to follow chemical events in living cells, techniques that are now widely in use. While Ian will be best remembered for his outstanding and elegant contributions toward elucidating the complex biosynthetic machinery in the assembly of vitamin B₁₂, he was a fearless experimenter. As Frank Raushel, one of my colleagues recalled, “I shall never forget his attempt to obtain the NMR spectrum of a typical Texas cockroach”.

Ian will be deeply missed by the members of the Chemistry Department at Texas A&M. His contributions to the bioorganic field, including the authoring of three books, 26 book chapters, and nearly 450 journal articles, as well as his plethora of invited lectures, have contributed greatly to the department's efforts to build a nationally and internationally recognized chemistry program. Not only was Ian a tremendous scientist, he was also a wonderful person and had a smile that would light up the room.

Even at the end of the road, at the age of 79, Ian showed no signs of retiring. He continued to lead a productive and creative research group and he had a grant application for an NIH Pioneer Award still pending! His dedication and passion for science are also part of his legacy and will remain a continual source of inspiration for young biosynthetic chemists like myself.

From Craig A. Townsend

Several major figures in biological chemistry passed from our world this year. Among them was Ian Scott. Ian was a founding member of the *Bioorganic Chemistry* editorial board. The first year of publication was 1971. I was a young Ph.D. student in his laboratory at the time and recall his enthusiasm for the birth of a journal in the field of science emerging between chemistry and biology. It is appropriate that those of us who knew him and were influenced directly and indirectly by him should contribute to an issue dedicated to his memory.

Ian was present at the creation of the modern discipline of natural product biosynthesis, influenced early on no doubt by the use of radiotracers to elucidate fundamental biochemical pathways, enunciation of the bioge-

netic isoprene rule, rediscovery of the polyketide hypothesis, progress understanding the pathway to fatty acids, among others, and Robert Robinson's seminal text *The Structural Relations of Natural Products* (1955). Ian's scientific career spanned more than 50 years and encompassed natural product structure proof, synthesis, chemistry, and biosynthesis of polyketides, isoprenoids, alkaloids, and, of course, vitamin B₁₂ and heme. Ian had the gift to recognize when a problem could be solved not only because of progress in related areas, but also because his interest in applying new technologies allowed great leaps forward to be made. He made use of UV-visible spectroscopy early in his career, and later chiroptical markers of natural products to reveal their absolute configurations. Ian was among the first to use stable-isotope NMR and paired-isotope labeling methods, now central to biosynthetic investigations. Then came brave, early applications of molecular biology to finally unravel the intimate details of aerobic and anaerobic vitamin B₁₂ formation. To me, carrying out 15 chemical steps with 12 recombinant enzymes to synthesize cobyrinic acid, the pivotal intermediate in the pathway to vitamin B₁₂, remains a landmark in the future development and engineering of natural product biosynthetic pathways. This was in the late 1980s.

On several occasions I heard him say, “The cream always rises.” It was a little scary, but students in the main were left to sort out the details of day-to-day work in the laboratory themselves. In retrospect I see it now not as abandonment, but the first step to becoming an independent scientist and seeking help, if needed, from others and the literature. However, having successfully accomplished something at the bench, he knew unhesitatingly where to go next. This clear sense of direction and what was possible, sometimes just possible, were perhaps instinct, but awe-inspiring and I think a measure of his greatness as a mentor and scientist. Not only was there an exciting destination, but he had thought of an experiment or technique that could get you there.

Ian was born in Glasgow in 1928 and received his Ph.D. with Ralph Rafael at the University of Glasgow in 1952. After a postdoctoral stint with Melvin Newman at Ohio State, he returned to the UK and the Nobel Division of ICI (1953–1954). Restless there, he took up what would be a career-shaping association with D.H.R. Barton (1954–1957). He returned to the University of Glasgow as a lecturer (1957–1962) and subsequently answered calls to professorships at the University of British Columbia (1962–1965), the University of Sussex (1965–1968), Yale (1968–1977), and, finally, Texas A&M (1977–2007), where he held a Welch Chair and was the Barton Professor of Chemistry at his death on April 18 of this year at the age of 79.

Ian in his long career received many honors and awards. Among these were the American Chemical Society Ernest Guenther Award, a Cope Scholar Award, and the Nakaniishi Prize. He was a Fellow of the Royal Societies of Lon-

don and Edinburgh, and received the Corday-Morgan Medal, the Davy Medal, the Queen's Royal Medal, and the Award in Natural Products Chemistry. He was also a recipient of the Welch Award and the Tetrahedron Prize, and he was a Fellow of the AAAS. He published over 450 papers, reviews, and book chapters, and more than 300 graduate students and postdoctorals contributed and benefited from the experience of his large and powerful research group. On the behalf of all of us, I thank him for his

guidance, inspiration, and good will. His many lessons live on through each of us.

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