Current Comments

The NAS James Murray Luck Award for Excellence in Scientific Reviewing: G. Alan Robison Receives the First Award for His Work on Cyclic AMP

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Two years ago, I discussed the importance of scientific reviews to the advancement of original research.[1] I pointed out that citation studies have shown that review articles frequently become milestone papers comparable in importance to experimental or theoretical papers in the same field.[2] Furthermore, review journals achieve extremely high impact, as can be seen by examining ISI® 's annual *Journal Citation Reports®* .

In spite of the fact that ISI publishes the *Index to Scientific Reviews™*, which covered over 28,000 reviews in 1978, I can say with confidence there still is an insufficient supply of high-quality scientific reviewers. One reason why many scientists are not prone to try their hand at review writing is that it is quite demanding. It requires much time and discipline to write a readable, authoritative review. To keep up-to-date on the literature, especially in a rapidly growing field, is a difficult task.

Perhaps another reason for the shortage of good reviewers is a certain lack of incentive. While publication of reviews may bring scientists informal recognition by their peers, reviewers themselves rarely achieve formal recognition for their accomplishments as reviewers. Most scientific prizes reward original research and new discoveries. Until now, no major award existed to recognize the contribution of reviews to the advancement of science.

A new annual award has been established to recognize authors who have made significant contributions to the review literature. The award is jointly sponsored by ISI and Annual Reviews Inc. The James Murray Luck Award for Excellence in Scientific Reviewing, which carries a $5,000 honorarium, is administered by the National Academy of Sciences (NAS). It is named for the founder of Annual Reviews, James Murray Luck, who served as that organization's editor-in-chief until his retirement in 1969. Dr. Luck remains on the editorial committee of the *Annual Review of Biochemistry*, which he started in 1932.

On April 23 of this year, at the Annual Meeting of the National Academy of Sciences in Washing-

ton, DC, the first James Murray Luck Award was presented to G. Alan Robison of the University of Texas at Houston. I was delighted to be present.

Professor Robison is best known for his reviews on adenosine-3', 5'-*mono*phosphate (cyclic AMP), one of the many nucleotides which are found in cells. Cyclic AMP regulates metabolic action within a cell when its level is changed by a hormone. Its biological significance was discovered in 1958 by the late Earl W. Sutherland and Theodore Rall.

Robison joined Sutherland's research team at Western Reserve University after receiving his Ph.D. from Tulane in 1962. The next year, Sutherland moved to Vanderbilt University, and Robison joined him there as a research associate. In 1971, Sutherland won the Nobel Prize in Physiology or Medicine for his work on cyclic AMP. Robison, meanwhile, had already begun to write what would eventually amount to 44 reviews on the subject in the years 1966-78. A selected bibliography of Robison's reviews is presented in Figure 1.

Robison was the principal author of the first inclusive review article on the role of cyclic AMP in cell functions. The article, titled "Cyclic AMP," appeared in the 1968 *Annual Review of Biochemistry*. In the ten years that followed its publication, the article has been cited over 850 times, making it a "Citation Classic." Robison's commentary concerning his work on this article appears in the Citation Classics feature of this week's *Current Contents® /Life Sciences*.

G. Alan Robison

In 1971, Robison was primary author of a monograph, *Cyclic AMP*, published by Academic Press (New York). The book had a tremendous impact upon research in this field. According to Sidney P. Colowick of the Vanderbilt University School of Medicine, "This book...was *the* authoritative compilation of the important work on cyclic AMP up to that time."[3]

The field of cyclic AMP research has grown enormously in the past twenty years.[4] Publication of research on the subject has doubled every two years.[5] By contrast, the doubling time for science as a whole is about 10 to 15 years. (p. 6)[6] Of Robison's contribution to the growth of this field, Samuel J. Strada, a colleague of Robison's at the University of Texas Medical School, writes: "It is fair to say

Figure 1:
Selected Review Articles, Books, and Parts of Books by G.A. Robison.

Sutherland E W & Robison G A. The role of cyclic AMP in responses to catecholamines and other hormones. *Pharmacol. Rev.* 18:145-61, 1966.

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Robison G A. Cyclic AMP as a second messenger. *J. Reprod. Fert. Supp.* 10:55-74, 1970.

Robison G A & Park C R. Cyclic adenylate in mammalian tissues. (Ellenberg M & Rifkin H, eds.) *Diabetes mellitus: theory and practise.* New York: McGraw-Hill, 1970. p. 132-49.

Robison G A, Dobbs J W & Sutherland E W. On the nature of receptor sites for biogenic amines. (Blum J J, ed.) *Biogenic amines as physiologic regulators.* Englewood Cliffs: Prentice Hall, 1970. p. 3-34.

Robison G A. Adenylic acid. *McGraw-Hill Encyclopedia of Science and Technology, 3rd ed.* New York: McGraw-Hill, 1971, p. 79.

Robison G A, Butcher R W & Sutherland E W. *Cyclic AMP.* New York: Academic Press, 1971. 531 p.

Robison G A, Cole B, Arnold A & Hartmann R C. Effects of prostaglandins on function and cyclic AMP levels of human blood platelets. *Ann. NY Acad. Sci.* 180:324-31, 1971.

Robison G A, Sutherland E W. On the relation of cyclic AMP to adrenergic receptors and sympathin. *Advan. Cytopharmacol.* 1:263-72, 1971.

Robison G A. Cyclic AMP. (Downman C B B, ed.) *Modern trends in physiology.* London: Butterworths, 1972. p. 143-61.

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Robison G A. The biological role of cyclic AMP: an updated overview. (Kahn R H & Lands W M, eds.) *Prostaglandins and cyclic AMP.* New York: Academic Press, 1973. p. 229-47.

Robison G A. Cyclic AMP and disease: an overview. (Good R A, Day S B & Yunis J J, eds.) *Molecular pathology.* Springfield: Thomas, 1975, p. 394-404.

Robison G A. Cyclic nucleotides in the limbic system. (Naftolin J, Ryan K J & Davies I J, eds.) *Subcellular mechanisms in reproductive neuroendocrinology.* New York: Elsevier, 1976. p. 381-9.

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that...he has been the principal person responsible for the dissemination of information in this area and without his efforts the field probably would not have developed as rapidly."[7]

Although Robison has participated in numerous research projects throughout his career, it is through his reviewing efforts that he has made his greatest contribution to science. As a graduate student, Robison was strongly influenced by several review writers, most notably Oscar Hechter.[8] But it was finally Dr. Sutherland who encouraged Robison to write reviews. "Earl [Sutherland] was enormously

appreciative of people who wrote good reviews," said Robison, "and he would quite often complain about the injustice that people didn't get credit for doing it."[8]

The idea for the James Murray Luck Award was suggested in 1977 by William Kaufmann, current editor-in-chief of *Annual Reviews*, at about the same time my essay on scientific reviewing appeared in *Current Contents*.[1] Kaufmann proposed the award to *Annual Reviews'* board of directors, of which I am a member, as an incentive for scientists to devote more energy to writing reviews. The directors approved the idea and asked the NAS to confer its sanction on the new award. In order to give the award a broader base of support, ISI agreed to share the expense of the honorarium with *Annual Reviews*.

Robison was named winner of the first NAS Luck Award by a five-member selection committee chaired by William K. Estes of the Rockefeller University. The committee members included Joshua Lederberg, president of the Rockefeller University; Philip W. Anderson of Bell Laboratories in Murray Hill, NJ; Bentley Glass of the State University of New York at Stony Brook; and myself.

The committee solicited nominations from more than 100 scientists in a wide variety of disciplines. (Readers wishing to make nominations for the next Luck Award should write to committee members.) From these nominations, the committee compiled a list of about thirty candidates worthy of consideration. A winner was finally selected on the basis of three criteria.

First, the winner's contribution to scientific reviewing should have extended over an appreciable period of time, rather than consisting of a single important paper. Secondly, the committee looked for evidence that the reviewing effort contributed significantly to some scientific advance. Citation analysis helped in this regard, but the winner was not selected on the basis of citation counts alone. While Robison's 1968 paper, "Cyclic AMP," ranks high on the list of highly cited review articles, it is by no means the most-cited. But this milestone paper has had enormous impact. The impact of this paper and the large body of good reviews Robison had written over a number of years assured his consideration by the committee.

The final criterion for selecting a winner was that the reviewer should not have been already publicly recognized for other scientific accomplishments to the extent that recognition for the reviewing effort would be overshadowed. The final list of candidates did indeed include some scientists who are widely known for their research contributions and have won their share of prestigious awards. But the committee wanted to select someone for whom reviewing was a primary activity and who had not been recognized.

ISI and Annual Reviews Inc. are committed to sponsorship of the James Murray Luck Award for five

years. After that time, perhaps other organizations will share the sponsorship of the award.

The winner of the first award was chosen without regard to disciplinary area. In the future, however, the award will probably rotate among disciplines from year to year. Robison happens to represent the life sciences, but future awards will undoubtedly recognize reviewers from the physical and chemical sciences as well as the social sciences.

This award gives me great satisfaction for a number of reasons. It honors an elder statesman of science— Murray Luck. It honors an outstanding scientist-reviewer —Alan Robison. But it also culminates my own preoccupation with reviews as a unique scientific methodology worthy of detailed analysis.

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