

# The natural history of an eponym: the Malloy-Evelyn method

Larry J. Kricka<sup>1</sup>, Jason Y. Park<sup>2</sup>

<sup>1</sup> Department of Pathology and Laboratory Medicine, University of Pennsylvania Medical Center, Philadelphia, Pennsylvania, USA

<sup>2</sup> Department of Pathology and the Eugene McDermott Center for Human Growth and Development, Children's Medical Center, and University of Texas Southwestern Medical School, Dallas, Texas, USA

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## ARTICLE INFO

### **Corresponding author:**

Larry J. Kricka  
Department of Pathology and  
Laboratory Medicine  
University of Pennsylvania Medical Center  
Philadelphia  
PA 19104  
USA  
E-mail: [kricka@penntest.com](mailto:kricka@penntest.com)

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## LETTER TO THE EDITOR

Over the years the vogue for naming reactions and methods has been commonplace in clinical chemistry. Bilirubin testing has produced a number of eponyms including the Jendrasik-Groff method (1,2), the van den Bergh reaction (3), Huppert's test (4), Smith's test (5), Fouchet's test (6), the Harrison Spot test (7), the Weber-Schalm method (8), the Ducci-Watson modification (9) and the Malloy-Evelyn method (10).

But how does someone's name become associated with a reaction or method? Have people had the audacity to name a reaction or method for themselves? Does it happen because the reaction or method assumes great utility or importance and the name is a convenient alternative to a more complex and cumbersome formal description?

We have looked at the history of the Malloy-Evelyn method, first described by the Canadians, Helga Tait Malloy and Kenneth A. Evelyn (McGill University Clinic, Royal Victoria Hospital, Canada) in 1937 (10). This quantitative colorimetric diazo coupling method for direct and indirect bilirubin in serum without the need for protein precipitation, utilized a direct reading photoelectric colorimeter invented by Evelyn.

Their first reference to their own 1937 publication was in a paper by Malloy and Lowenstein in 1940, and the method was referred to as “the method of Malloy and Evelyn” (11). The first citations to their work by others, was in two publications in 1938. In the first, a joint research paper from the South Bend Medical Laboratory and Hoffman-La Roche & Company AG, the text simply states that “Malloy and Evelyn have introduced a method” and the paper describes the adaptation of the method to a Sheard-Sanford photometer (12). In the second publication, a chapter in a German textbook, the text includes “MALLOY und EVELYN” in a list of spectrophotometric methods for bilirubin, and the citation style was to list all authors, so this was not an attempt to name the reaction (13).

It seems that the first naming was in a paper from Duke University School of Medicine, submitted in October 1939, where the plasma bilirubin assay is described as “the method of Malloy and Evelyn” and the “procedure of Malloy and Evelyn” (14). The die was cast! Subsequently, the method described in the 1937 paper became known as the method, process or procedure of Malloy and Evelyn, or the Malloy and Evelyn method, procedure or technique, or in an abbreviated form, simply as Malloy-Evelyn. During the ensuing years, their method gained traction and it was referred to by name in the text of at least one publication every year since 1939, up to the present day. From the earliest month tracked by the Journal of Biological Chemistry (September 2003) to June 2020 there were 21,830 pdf downloads of the original 1937 paper. In Web of Science (Clarivate Analytics) there are 1,270 citations in the time period from 1965 to 2020 with at least 2 citations per year (range 2 to 65).

But who were Malloy and Evelyn? They are not the subjects of biographies or autobiographies and so we searched for biographical information (see brief biographies in the Supplement). Evelyn was a professor of Medicine and Director of the

British Columbia Medical Research Institute. He published 15 papers between 1936 and 1978 (four with Malloy) invented a colorimeter and a device to test and train the night vision of soldiers. Malloy was a graduate of McGill University and published 8 papers between 1937 and 1941, and also made a brief foray into the water fluoridation controversy in 1959. A continuing mystery is her book, cited on her gravestone, “The Shape of Inner Freedom” of which we can find no trace!

In recent years, naming a reaction has been less common, for example, the polymerase chain reaction (PCR) was not called the “Mullis reaction”! However, others have found eponymous fame, e.g., Westgard Rules, and no doubt, in the coming years, more will be added.

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## SUPPLEMENT

### *The natural history of an eponym: the Malloy-Evelyn Method*

Larry J. Kricka and Jason Y. Park

## INTRODUCTION

This Supplement explores the personal history of two famous scientists: of Helga Tait Malloy (Section 1) and Dr. Kenneth A. Evelyn (Section 2). As far as we can tell, there are no biographies for either of these two scientists, and the information below has been pieced together from census data, shipping records, yearbooks, and newspaper articles.

### 1. HELGA TAIT MALLOY (1909-1993)

Helga Tait Malloy, nee Tait, was born in Edinburgh, Scotland on May 19, 1909 (1). According to the 1921 Canadian Census she was the oldest of 5 children (Sigrid, Ragnild, Erik, Ingrid) to John and Jean Tait (2). Her family immigrated to Montreal from Scotland in 1919. At the Montreal High School, Helga excelled at swimming and set records in the 50-yard swim in 1922 (3) and the one-mile swim in 1923 (4).

After high school, she attended McGill University, in Montreal, Canada, where her father, John Tait (1878-1944), was the [Joseph Morley Drake](#) Professor of Physiology (5). At McGill, she was Secretary and Treasurer of the McGill Labour Club (6), President of the House of Commons Club (7), President of the Royal Victoria College (8), and President of the Ski Club (9). The 1931 Old McGill yearbook mentions that “*she suddenly left in search of the local accent at Edinburgh University – found it and returned*” (9). This cryptic comment perhaps reveals a crisis in Helga’s life, or perhaps she was nostalgic for her holiday in 1923, when, aged 14, she travelled to Scotland in May, and returned in September on the SS Cassandra (10). She graduated from McGill in 1931.

She married Connolly James Patrick Joseph Malloy in 1936 or 1937 (thereafter, in the literature, she is cited as Helga Tait Malloy) and they had three children: Brian John, Brenda Margaret and Kirsten Ann. He was an assistant physician at the Royal Victoria Hospital and lecturer at McGill University and made a Fellow of the American College of Physicians in 1954 (11) and was also a Fellow of the Royal College of Physicians and Surgeons in Canada, of the American Academy of Allergy, and of the American College of Allergy (12).

During her career, she published a total of eight papers (13-21), and is best known for her work with Evelyn on bilirubin assays. Her research career began in 1936 in the Department of Medical Research at the University of Toronto, Ontario, Canada, and the following year she moved to the Department of Medicine at McGill University Clinic, Royal Victoria Hospital, Montreal, Canada. Between 1937 and 1941, her McGill affiliations also included: Departments of Paediatrics and Pathology (1937), the Paediatric Department (1940-1941) and, finally, the Department of Psychiatry (1945).

She was the recipient of a grant from the Banting Research Foundation and she is mentioned in the 1938-1939 Report (22):

*“Mrs. H. T. Malloy, working in the University Clinic, Royal Victoria Hospital, Montreal, has investigated hereditary jaundice in rats and has found that it does not depend upon enhanced hemolysis but rather in the inability to parenchyma liver cells to deal properly with blood bilirubin, i.e., the hereditary factor concerns parenchyma liver cells rather than haemopoietic tissue.”*

Her final paper, in 1945, from the Department of Psychiatry at McGill (the first psychiatric day hospital in the world) (23) was on Rorschach studies on patients with paranoia (21), and it represented a curious and major departure from her previous biochemical studies. Her subsequent career post-1945 is a mystery and our presumption is that she focused on her family which included three children. One further scientific excursion was on May 20, 1959, when she had a letter titled “Facts and Fluoridation” published in The Gazette (Montreal, Quebec, Canada). In this letter, she drew attention to a booklet “Statement on the Fluoridation of Public Water Supplies by the Medical-Dental ad hoc Committee on Evaluation of Fluoridation” that was available for 21 cents. Her position of fluoridation is not clear as she states “I fail to understand the fervor which goes into fluoridation promotion” (24).

She died on February 3, 1993, and is buried in the Pacific View Memorial Park, Corona del Mar, Orange County, California, USA with her daughter, Brenda M. Malloy (1944-2006)(1).

The headstone for her grave is perplexing. It identifies her as the author of “The Shape of Inner Freedom”. All our efforts to find this book have been to no avail. It is curious that this epitaph was chosen in view of the apparent obscurity of the book. It has not been unusual for the headstones of famous authors to bear a quote from their work (e.g., Scott Fitzgerald: “So we beat on,

*boats against the current, borne back ceaselessly into the past” – The Great Gatsby) (25). However, adoption of “The author of” style of epitaph seems unusual, and might suggest that the book was written under a nom de plume, and the epitaph is a revelation of the fact that Malloy was the real author?*

## 2. KENNETH A. EVELYN

Kenneth Evelyn, was a PhD physicist who later became a medical doctor (26). He worked in the Department of Medicine at McGill and according to Dr. Kerr, he had one of the highest reputations for medical research in Canada. At McGill, he invented a photoelectric colorimeter in 1936 (27-30) and worked with Malloy to develop bilirubin (15,16), hemoglobin (17) and ascorbic acid assays (18). During World War II, he is credited with inventing a device to test and train the night vision of soldiers (31). His contribution is credited with improving the lighting in planes and tanks. He moved to the B.C. Medical Research Institute in Vancouver, Canada, in 1953, and subsequently became its Director and was also appointed professor of Medicine (32,33).

Malloy published 26 publications during the period 1936-1978 (15-18, 27-30, 34-51), four with Malloy on analytical methods (15-18), but in later years most were on clinical topics (e.g., hypertension).

More about Dr. Evelyn can be gleaned from an oral history interview with Dr. Robert Kerr, who was Professor of Medicine and the Head of the Department of Medicine beginning in 1950. In particular, he provides an interesting insight into Dr. Evelyn’s medical history as described in the following extract from his interview (32):

*“Dr. Evelyn, when he was appointed director of the Medical Research Institute, was also appointed professor of the Department of Medicine - Associate Professor first and then was promoted*

to full Professor. He was interested in hypertension and he did a lot of research, particularly in serum protein finally. He was plagued with ill health. Shortly after he came here - I could tell you about him, he was a very interesting person. He was dependent upon four medications which had provided their discoverers with the Nobel prize. I don't think he would mind me recording his medical history briefly now. He came here - and I knew he was not well but he and his doctors in Montreal assured me that he could manage but, as it turned out, his health deteriorated but he lived for - well, he just died about three or four years ago and he lived to retire at the normal age. During the war he was in the Air Force doing research on night vision and various other aspects. While in the Air Force he developed anaemia. Then he developed a disease called sarcoidosis, and this affected his adrenal glands. The adrenal glands were diseased and he developed Addison's disease, which is an adrenal insufficiency. With this he was first given what was available, an Upjohn extract of adrenal cortex. Then, when cortisone was discovered in 1947-48 he was started on cortisone, which was fine but he went down to Boston for a year from Montreal. A professor of medicine there put in some pellets of cortisone into his back, to be absorbed slowly. However, these proved to be deleterious in that he developed diabetes with these and, by the time he got back to Montreal one day, he was in diabetic coma. He was dependent, first of all on cortisone which gave Hench and others the Nobel prize. Then he became dependent on insulin for his diabetes which gave Banting and Best the Nobel prize. He also developed hypothyroidism and had to take thyroid extract, which had given Kendall the Nobel prize; and he also was anaemic, which required liver extract, which had given Cassell and Minot the Nobel prize in 1923. He had four medications. But he was a very brittle diabetic and he would go into hypoglycemia - too low a blood sugar - very frequently. He had

multiple hypoglycaemic attacks. But he rallied around and continued to do his work. Basically, he was an excellent person as far as research was concerned. He continued on that. After I retired, he was still a member of the Department. That's the history of Dr. Evelyn. I guess he was probably the first, because of this funding from the Medical Research Institute, fulltime appointment in the Department of Medicine, really. He was an excellent teacher as well."

Dr. Evelyn was an influence on two well-regarded physicians, C. Miller Fisher (52) and Peter Allen (53). Drs. Fisher and Evelyn worked together to test out a low sodium diet on a patient dying from congestive heart failure. The patient improved but when the attending physician found out what had transpired, he forbade a future trial. Dr Allen held a research position at the British Columbia Research Institute, Canada under the direction of Evelyn where they worked together on a mesh supported vena cava autograft to replace diseased abdominal aorta.

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