OBITUARY

Nicole Muller-Bérat Killmann 1932–2014 *Leukemia pioneer*

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Dr Nicole Muller-Bérat Killmann, a well-known and widely admired haematologist and journal editor, died in Paris on 23 February 2014 at the age of 82 years, a secret she kept assiduously. Christine Nicole was born in Paris in 1932. She came from an extraordinary family. Her parents were dental surgeons who met at the Paris School for Dental Surgery where Nicole's mother was one of the first women dentists. Her father came from a renowned Greek family of Tuscan origin, active over the centuries in writing, philosophy and Jewish studies who built much of modern Thessaloniki. Her maternal grandfather was Benjamin Gross, an agronomist from Leipzig—interestingly the hometown of her close colleague John Goldman's family (and also Bach, Goethe, Mendelssohn, Schumann and Wagner to name a few). The family over several centuries built a large wine estate in Moldavia. During the *Belle Époque*, their wines were sold in trendy Parisian cafés such as the Café de la Paix. Both families lost everything during wars and came to France fleeing the Ottoman–Greek turmoil and World War I.

Nicole attended university in Paris and trained in internal medicine. She was bright and adventurous. She moved to Israel to live on a kibbutz after graduation. Anyone who knows Nicole will immediately realize that despite her best intentions she was quite unsuited to kibbutz life. On returning to France she married, had a child and acquired her second of many surnames: Muller (or Mueller)-Bérat (she was a collector). In Paris, Nicole focused on the young and exciting field of haematology, stem cells and transplantation. After further postgraduate studies there and in Strasbourg, she moved to Rotterdam to work with Professor Dirk van Bakkum, a young Karel Dicke and others at the Radiobiology Institute, TNO.

Nicole had a great success in the laboratory that brought her to the scientific and romantic attentions of Professor Sven-Aage Killmann (or Killman, Killmann; the problem of transposing from other languages) from Copenhagen. Nicole had divorced, and she and Sven-Aage fell in love and married soon after. She thereby acquired a third surname: Muller-Bérat Killmann. Given the diversity of spellings of Muller and Killmann, Nicole had about 11 possible surnames.

Nicole and Sven-Aage made a formidable 'duo' working together in the laboratory to unravel the biology of acute leukaemias and related disorders. They spent three years with Professor Eugene Cronkite and colleagues at the Brookhaven National Laboratory in the USA. Tritiated thymidine had just been discovered as a technique to label dividing cells and follow their fate, Nicole and Sven-Aage were able to study the lifespan of haematopoietic cells in the laboratory and in humans. Their reports on this subject are classics.

Next, they returned to Denmark where Nicole worked in the State Serum Institute in Copenhagen as leader of the leukaemia and transplantation laboratories. Her main research interest was the use of *in vitro* cultures of normal and leukaemia cells to study biological questions, but she also collaborated with her husband on leukaemia diagnosis. Few people know of Nicole's clinical contributions including performing one of the early HLA-haplotype mismatched bone marrow transplants for severe combined immune deficiency (1978) and an early description of acute lymphoblastic leukaemia with t(4;11). She must have been pleased to see the tremendous progress in unravelling the molecular basis of this disorder. For example, *Leukemia* published a report in 2013 of the MLL recombinome in 1590 subjects.

Nicole and Sven-Aage developed the first journal devoted to leukaemia, *Leukemia Research* in 1977. They were also active in a series of meetings of leukaemia 'mavens' (Nicole would have liked this term) held at Wilsede, Germany, organized by Rolf Neth and Robert Gallo, which began in 1975 and where she met many critical thinkers in the field including Janet Rowley, Malcolm Moore, Fred Stohlman, Mel Greaves, Don Pinkel, Harald zur Hausen, Dieter Hoelzer, Rüdiger Hehlmann and many more.

In 1987, Nicole and Sven-Aage founded *Leukemia*. After Sven's death Nicole returned to Paris (which she loved; she said Copenhagen was too cold and grey) to become the Editor-in-Chief. She tackled the job with great vigour, sometimes to the dismay of many authors and reviewers. Nicole dedicated her life to *Leukemia*, running what might be best termed a 'one-woman show' out of her Paris flat. She was rigorous in her demand for scientific accuracy and good writing. She read every submission and was not shy to overrule her deputies' and reviewers' recommendations when a typescript did not meet her high standards. The result of her efforts is the considerable worldwide respect for *Leukemia* and an extraordinary impact factor. We always felt her unbridled devotion to *Leukemia* reflected her continued love of and respect for Sven-Aage. She saw the journal as a lasting tribute to his memory.

Later in life Nicole somewhat regretted her use of laboratory mice in her experiments. She took an interest in animal welfare, especially dogs—the dog rescue projects of her daughter, in wolves and in wild nature fauna. She enjoyed gardening and especially growing bulb flowers and showed a growing interest for Mediterranean flora and preservation projects.

On a personal note, one of us (RPG) dined with Nicole at her flat *cum* office *cum* salon on many occasions. During aperitifs she always commented ‘Sven really liked you’. And that was it. I never knew what she thought of me. Always courteous in social matters, she was likely too polite to say.

Honoured (and feared) by many colleagues, she received three awards from France: Chevalier, Officier des Palmes Académiques and Chevalier de l’Ordre du Mérite. She is survived by her multi-talented daughter Carole, an economist, international

consultant in health financing, regional development and system sustainability. Amazingly, also a coloratura soprano specializing in baroque music.

Nicole was the heart and soul (and everything else) of *Leukemia* and was working on this issue of the journal up until a few days before her death. She will be greatly missed.

You can honour Nicole’s memory by supporting the tree planting programme at www.neot-kedumim.org.il

RP Gale¹ and A Hochhaus²

¹*Haematology Research Centre, Imperial College London, London, UK and*

²*Abteilung Hämatologie und Internistische Onkologie, Universitätsklinikum Jena, Jena, Germany*