



In Memoriam

In Memoriam: Michael "Mike" Steven Denison 1954–2022



The authors of this special issue of Regulatory Toxicology and Pharmacology would like to dedicate these articles to Michael "Mike" Steven Denison, who passed away on March 22, 2022, at the age of 67 due to glioblastoma. Mike was a Distinguished Emeritus Professor in the Department of Environmental Toxicology at the University of California, Davis, and a world-renowned expert in the field of Ah-Receptor and dioxin-like toxicity, which was his major research focus for the past 44 years. Throughout his scientific career, he focused on understanding the molecular mechanisms of a protein known as the Ah receptor that mediates the biological/toxicological actions of dioxins and related chemicals. As such, he contributed significantly to the development of an in vitro assay that could rapidly determine dioxin-like equivalencies in many human and environmentally relevant matrices, such as human milk, food, fish, and a wide array of environmental samples, including sediments, air, and water.

His creation and development of the Chemical Activated Luciferase gene expression (CALUX) assay, a cell-based bioassay used for the detection of specific environmental contaminants, made him a globally acclaimed "dioxin scientist". The CALUX assay can be used to detect AhR activity for a wide range of dioxin-like chemicals found in foods and environmental media. This test was approved as an international standard for detecting environmental contaminants by the Organization for Economic Cooperation and Development and in the US by the EPA and is internationally utilized as a research tool and as a practical measure to protect human and environmental health. Moreover, Mike remained continuously curious about the biological and toxicological mechanisms of the Ah receptor and its role in physiology and development in various species, including humans. As a result of this scientific curiosity and insights, he made many seminal contributions to the Ah receptor field

and was widely considered a leader in advancing the study of Ah receptor biology.

Mike was also a principal organizer of the annual International Symposium on Halogenated Persistent Organic Pollutants (POPs) for many decades, and this activity alone contributed significantly to our understanding of the effects of dioxin-like compounds, as well as persistent brominated flame retardants and perfluorinated compounds. These annual symposia contributed worldwide to restrictions in use and scientifically sound safety limits for humans and the environment.

When the World Health Organization asked Mike and me in 2021 to organize a re-evaluation of the TEF-values for dioxin-like compounds, our initial thought was "not another one, please". However, as we started working on the setup of the expert meeting, we gradually became more enthusiastic and decided to propose a meeting that was different from the ones in 1998 and 2005. Besides updating the ever-growing wealth of toxicological studies, we quickly agreed that this meeting should also include a significant focus on the surrounding uncertainties from dioxin-like congeners. And so it did, as can be seen from the articles that are now included in this special issue and the newly proposed TEF values by the World Health Organization. Although he and I always took science seriously, we also could jointly amuse ourselves and put things in perspective. In this respect, we often joked that we just knew too much about dioxins compared to other relevant contaminants, which eventually allowed the identification of uncertainties around TEF values based on hundreds if not more toxicity studies. Unfortunately, due to his devastating illness, he had to step out of the organization of this WHO expert meeting on TEFs. As a result, we have sorely missed his knowledge, insights, and humor throughout this process.

Mike was a happy and optimistic person, a wonderful friend, and outstanding person in all respects. It was a great privilege to be his friend as well as a fellow "dioxin-scientist." I think that I speak on behalf of all the authors in this special issue when I say that we greatly miss your insights and knowledge. However, most of all, we have missed your great sense of humor during this whole process to produce this special issue. He is dearly missed by all who were lucky enough to know him.

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