

Phytomedicine mourns the death of its founding editor Professor Hildebert Wagner

Prof. Dr. rer. nat. Dr. h. c. mult. Hildebert Wagner died on November 5, 2021 at the age of 92. Without a doubt, he was one of the archetypes that coined pharmaceutical biology in Germany and far beyond all over the world for decades. The entire field loses one of the big rocks in the surf of the rough scientific oceans.

Everyone who knew him personally was aware of the remarkable scientific momentum he brought into our discipline. There are indeed only a limited number of scientists, who systematically solved even highly complex problems with the same passion, enthusiasm, rarely seen vigor, and commitment.

Hildebert Wagner had a keen nose for new, scientifically attractive developments. He tried to incorporate new concepts from related neighbor disciplines into pharmaceutical biology. He spanned the arc from phytochemistry and chemical analysis, standardization and quality control of herbal extracts, bio-guided fractionation of phytochemicals, pharmacokinetics to methods from classical pharmacology (e.g., receptor-binding studies). He recognized the necessity of randomized clinical trials to bring phytotherapy closer to the patients (Darbinian et al., 2000; Gabrielian et al., 2002).

He was always looking for new ways to integrate rational phytotherapy into Western academic medicine based on the reductionistic approach and on multi-target therapy, network pharmacology, and synergy concepts (Efferth et al., 2015; Panossian et al., 2021; Wagner, 2011). Hildebert Wagner systematically developed these basic principles of pharmacognosy over decades in his pioneering studies of efficient complex preparations used in TCM and their mechanisms of action mainly associated with adaptive stress response of innate defense systems (Wagner et al., 1994; Panossian et al., 1999a; 1999b; Panossian and Wagner, 2011).

His work on synergies of natural products with Western-style chemical drugs is among the most cited ones (Ulrich-Merzenich et al., 2009; Wagner and Ulrich-Merzenich, 2009). Even in the later years of his career, he was still writing visionary papers on systems biology and "-omics" technologies (Ulrich-Merzenich et al., 2007; Wagner and Efferth, 2017). Indeed, he was a pioneer in pharmaceutical biology well into his old age.

His writing œuvre includes about 1000 original articles, reviews, book chapters, and textbooks and monographs, e.g., his TLC and HPLC atlases are unique encyclopedias of plant analysis used in the industry for quality control of herbal substances and herbal preparations (Wagner and Bladt, 1996; Wagner et al., 2011).

At this point, we do not wish to review in detail the sheer number of his merits. This has been reported several times before on diverse occasions (Efferth, 2019; Panossian et al., 2014; Scholz and Wessinger, 2021). However, we would like to emphasize some highlights, also

because they can be trend-setting for the young generation of scientists.

Hildebert Wagner studied pharmacy at Ludwigs-Maximilians-Universität (LMU) Munich, where he graduated in 1953. After completing his doctorate (1956) and habilitation (1960), he worked as visiting scientist at the University of Columbus, Ohio, from 1970 to 1971. Returning to Germany, he was director of the Institute of Pharmaceutical Biology at LMU Munich from 1965 to 1999. In the meantime, he was also dean of the faculty there. He supervised more than 100 Ph.D. students, and several of his students were later appointed to chair professorships inside and outside of Germany.

In addition to being an Editor and Reviewer in several journals, he fulfilled one of his dreams in 1994. He founded the journal *Phytomedicine*, first published by the Gustav Fischer Publishing House in Stuttgart, Germany and later taken over by Elsevier, together with his colleague from the USA, Professor Norman Farnsworth, University of Illinois at Chicago (Fig. 1). This journal was particularly close to his heart, and this for a good reason. With endless effort and time, the two Editors-in-Chief helped authors to continually improve the quality of their articles. As a result, *Phytomedicine* established itself as a highly respected journal worldwide. In 2004, Prof. Yoshinura Asakawa, Tokushima Bunri University, Japan, temporarily joined the team as the third Editor-in-Chief. As Norman Farnsworth died in 2011, Hildebert Wagner continued to run the journal alone until 2014. Then, Professor Alexander Panossian became Editor-in-Chief assisted by Professor Susana Zacchino and Professor Thomas Efferth as Co-Editors. In 2017, Thomas Efferth became Editor-in-Chief, and Susana Zacchino continued as Co-Editor. *Phytomedicine* has continued to grow to one of the leading international journals, and we are almost certain that Hildebert Wagner is looking down at us from heaven with the words "Not too bad, my dears."

With Hildebert Wagner as a role model, young scientists worldwide can pursue successful careers in pharmaceutical biology. Especially in the current economic, political and health crises, rational phytotherapy and evidence-based natural product research can provide new and valuable impulses, whereas classical chemical synthesis-driven pharmaceutical research cannot satisfactorily and sustainably solve the obvious systemic weaknesses in our health policy systems.

As editors, reviewers, authors, managers, and employees in the *Phytomedicine* Editorial Office, we collectively mourn the loss of Professor Hildebert Wagner. Our deepest sympathy goes to his wife Ursel and his children. We will continue to develop the scientific legacy of Hildebert Wagner and Norman Farnsworth and work to ensure that *Phytomedicine* publishes papers of high scientific excellence and that rational phytotherapy and evidence-based natural products research make a considerable contribution for the sake of all patients on this globe.

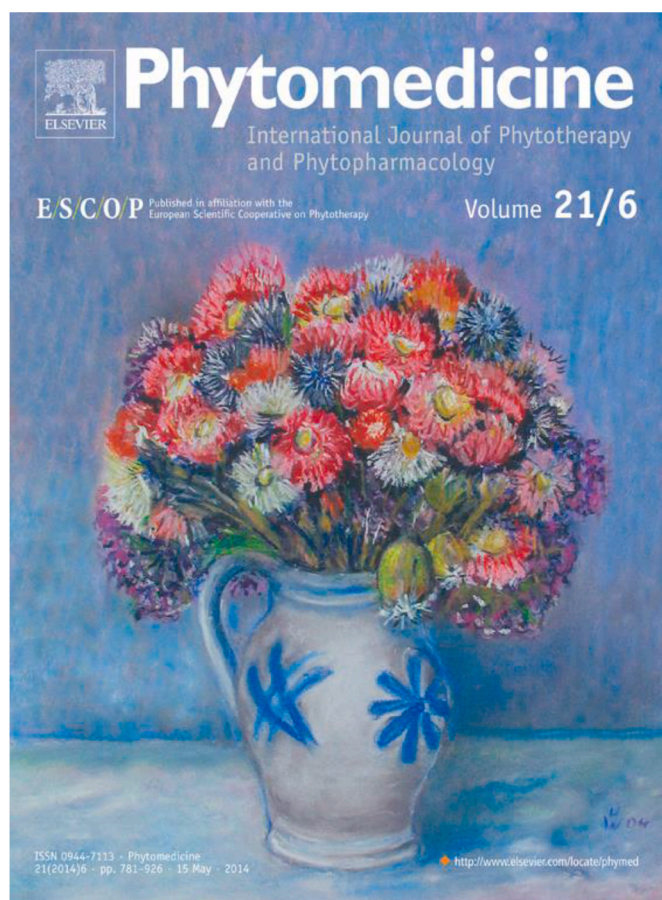
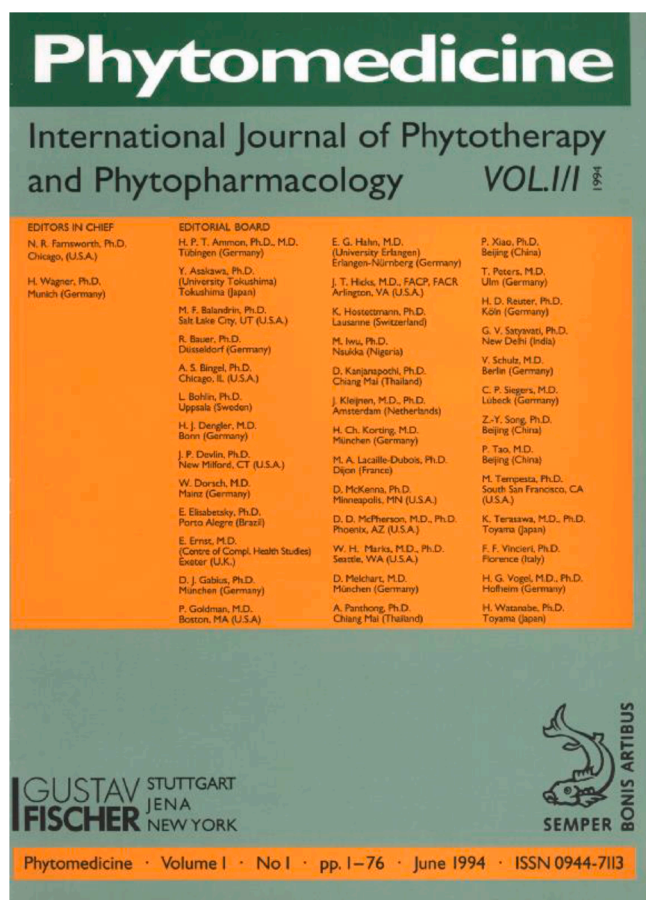


Fig. 1. Historic cover pages of Phytomedicine.

Left: The very first cover page of Phytomedicine (Volume 1, Issue 1).

Right: The cover page dedicated to Hildebert Wagner's 85th birthday (Volume 21, Issue 6). The cover shows a wildflower bouquet drawn by Wagner himself.



Fig. 2. Hildebert Wagner with the editors of Phytomedicine. A. The two founding editors Hildebert Wagner and Norman Farnsworth (in front of Greek Islands in Lisle, IL, Norman's favorite restaurant, 2004). B With Susana Zacchino (at the X. Argentinian and XIII. Latin American Symposium of Pharmacobotany, Córdoba, Argentina, 2010). C With Alexander Panossian (at the 85th birthday celebration in Munich, Germany, 2014). D With Thomas Efferth (at the 90th birthday celebration in Munich, Germany, 2019).

Farnsworth was editor-in-chief (EiC) from 1999–2011; Wagner was EiC from 1999 to 2016; Panossian was Co-Editor from 2012 to 2014 and EiC from 2014–2016; Zacchino is Co-Editor since 2014; Efferth was Co-Editor from 2013–2016 and is EiC since 2017.

The photos are from private sources. Fig. 1A was obtained from Prof. Guido Pauli, University of Illinois in Chicago, USA.

CRediT author statement

Thomas Efferth wrote the paper draft and drew the figures.

Susana Zacchino and Alexander Panossian edited the manuscript and made additions to text and reference sections.

All data were generated in-house, and no paper mill was used. All authors agree to be accountable for all aspects of work ensuring integrity and accuracy.

Declaration of Competing Interest

We, the undersigning authors declare that there is no conflict of interest.

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Thomas Efferth^{a,*}, Susana Zacchino^b, Alexander Panossian^c

^a Johannes Gutenberg University, Institute of Pharmaceutical and Biomedical Sciences, 55128 Mainz, Germany

^b National University of Rosario, 2000, Rosario, Argentina

^c EuroPharma USA Inc., Green Bay, WI 54311, USA

* Corresponding author.

E-mail addresses: efferth@uni-mainz.de (T. Efferth), szaabgil@gmail.com (S. Zacchino), ap@phytomed.se (A. Panossian).